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ABSTRACT

A cost-benefit analysis of the Alberta Correspondence School (ACS) concluded that at discount rates above 8 percent, high school by correspondence is less costly than regular high school and that the cost-benefit model was sensitive to variations in student completion rates and instructional costs. Three additional studies focused on specific costs of correspondence instruction at the ACS, including a study of instructional costs (particularly lesson-marking costs); a study of course preparation, printing, and distribution costs; and a study of the feasibility of continuing to operate a printing facility at the ACS. Finally, the effectiveness and efficiency of the ACS were examined by studying certified staff utilization, student motivation and feedback, the quality of the instructional program, prevailing attitudes toward correspondence study, student achievement patterns, and incentives for students to complete their studies. Findings of the studies found that the ACS program had a number of advantages over the regular instructional system in Alberta. (Author/JG)

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A COST-BENEFIT STUDY
OF THE
ALBERTA
CORRESPONDENCE SCHOOL

BEST COPY AVAILABLE

Prepared by

Planning and Research Branch
Alberta Education
Executive Building
10105 - 109 Street
Edmonton, Alberta
T5J 2V2
Telephone: 427-8225

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ABSTRACT

A number of factors triggered the decision to conduct a cost-benefit analysis of the Alberta Correspondence School. Among them was the 1975 Collective Agreement with ACS teachers which escalated salaries and the imposition of the budget guideline which limited expenditure increases to 11 percent in the 1976 fiscal year.

When a cost-benefit analysis was made of the ACS and compared to the regular instructional system it was found that at discount rates of 8 percent, or higher, correspondence study provided the lowest net social cost. At the same time the cost-benefit model was found to be sensitive to inproved student completion rates and to reduced costs. Further study into the ways and means of improving completions rates and reducing costs indicated that the ACS operation is presently very labor intensive. Numerous areas were identified where systems analysis and automated or electronic data processing systems may be effectively applied.

Though the ACS operates one of the few remaining independent printing facilities within the provincial government, the ACS printing facility proved to be more efficient than other available alternatives.

The study concluded that the ACS should continue operation as at present. Moreover, correspondence study should be regarded as a viable alternative to the building of new schools in remote areas or in areas with transitory populations and for provision of low enrollment courses in high school.

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OVERVIEW

Purpose of the Study

Two factors triggered the decision to study the Alberta Correspondence School (ACS) from a cost-benefit point of view. First, the most recent collective agreement with the ACS teachers has increased salary costs--particularly if a summer school program is offered. Second, the government budget guideline of 11 percent for the 1976 fiscal year placed the ACS in the position of having to cut costs, services, or both.

Though these factors initiated the study, there was also a perceived need to study the role the ACS plays in Alberta's educational system, the role it should play, the costs and benefits associated with these roles, and the effectiveness and efficiency with which the present roles are being carried out.

Scope of the Study

Stage 1

Stage 1 of this study, completed early in 1976, examined the Summer Session program offered by the ACS (Appendix 1). On the basis of the Stage 1 report it was decided to continue the Summer Session program but to encourage winter students to complete lessons before the end of June. After 1 July these lessons received low marking priority.

Stage 2

The approach adopted in the second stage of this study followed the procedure recommended by Parker (1965). This procedure included:

- Identification of the objectives to be accomplished by the Alberta Correspondence School (ACS),
- identification of benefits and costs associated with each objective,
- Identification of alternate means of achieving these objectives; and,
- Analysis of the effectiveness and efficiency of the ACS.

Approach to Stage 2 of the Study

In accordance with Parker's outline, specific problems were stated at the outset of the study. These problems and questions were expanded as the study progressed. Relevant data were collected and analyzed in order to answer these problems and to identify solutions.

The Stage 2 study report is divided into several parts: objectives of the Alberta Correspondence School (ACS); the study outline; a cost-benefit analysis; effectiveness and efficiency studies and, conclusions and recommendations.

REFERENCES

Figur, Berthold, Based on correspondence between Dr. Berthold Figur, Director of the Alberta Correspondence School and Dr. S. N. Odynak, Associate Deputy Minister of Education, November, 1975.

STUDY OUTLINE

The study followed a traditional format: statement of the specific questions to be answered by the study; identification of sources of data, definition of the analysis procedures, statement and discussion of findings, and development of conclusions and recommendations. The first two items are presented below. The analysis procedures varied on the basis of data availability and are treated in each of the separate sections together with the findings and discussion. Tentative conclusions and recommendations are drawn in each section of the study. These tentative conclusions and recommendations are synthesized in the final section.

Study Questions

To assess attainment of the identified ACS objectives, a number of questions were set forth to be answered during the course of the study.

Part I: Cost-Benefit Analysis

1. How is the nature of the instructional program at the ACS determined?
2. Who derives benefit from the ACS and what are these benefits?
3. What is the value and costs of these benefits?
4. What is the rate of return to social investment in correspondence education and how does it compare to regular instruction?
5. Are there alternate ways of obtaining these benefits and what are the costs associated with these alternatives?
6. To what extent should consumption courses be subsidized?

Part II: Effectiveness and Efficiency Analysis

1. a. How do instructional costs (per pupil, per course)

compare with instruction in regular schools and with other correspondence schools?

b. What is a reasonable level of productivity (marking rate) for teachers in different subjects and grades?

c. What is an appropriate lesson marking fee for contracted lesson marking in different subjects and grades?

2. a. What are the costs for development, printing, and distribution in each course?

b. What is the most efficient lesson distribution policy?

c. What is an appropriate fee for sets of lessons in each course (exclusive of marking)? As an example, what should classroom teachers pay for sets of lessons to be used as resource materials?

3. a. What are the costs of maintaining a printing facility?

b. How do these costs compare to contracted printing or other alternatives?

4. a. What is the volume of lesson flow during the year?

b. What are the associated staffing problems?

c. How can staffing efficiency be improved?

5. a. What motivates correspondence students?

b. What is a reasonable expectation for lesson turnaround time?

c. What is the typical turnaround time for students' lessons at the ACS?

d. What is the flowpath of lessons from students, through the ACS, and back to students?

e. Can the lesson flowpath through the ACS be shortened or improved?

f. Can lesson quality and difficulty indices be developed to identify lessons which serve as stumbling blocks for students?

6. a. Are the student workloads demanded by correspondence courses approximately equal for all courses of equal credit value?

b. How does the workload of correspondence study compare with workloads in regular instruction?

c. Are there lessons in a course which have a critical relationship to course completion?

7. a. What attitudes do students, principals of schools where some students use correspondence study, and ACS teachers hold towards correspondence study? Do these attitudes towards correspondence study bear a relationship to other attitudes or to locus of control indicators? Is correspondence study a preferred learning style for some students?

8. a. Do students from some schools or jurisdictions perform better than students from others? Are there some types of students who perform better than others?

9. a. Are there incentives that would encourage students to complete courses?

Limitations

The study was limited in several significant ways.

The depth of examination of many of the issues that emerged during the design phase of the study was limited by resources and time--primarily a result of the broad range of areas studied.

The study was further limited because of a lack of precedent. Few studies were found which focussed on the issues examined in this study.

Finally, the study was to some extent limited because the data (though available in quantity) were not integrated nor in machine-usable forms.

Delimitations

The study was confined to examination of aspects of the ACS and its operations which were most directly related to the cost-benefit equation. Other aspects of the ACS were examined only when it became evident that they were capable of having a significant bearing on the critical operations of the ACS.

The study did not examine the instructional component of the ACS--that part of learning theory that applies to development of curricula, marking lessons, or motivating students. In these areas, though the findings suggested that much research could and should be conducted, it was determined that the ACS teachers must take initiative.

Neither did the study examine the clerical function--specifically those activities associated with typing and preparing course materials, maintaining accounts, and maintaining records. Again, as in the case of instruction, there is evidence that changes may be justified, particularly changes towards more technology-intensive practices. These might include word-processors and accounting machines.

Sources of Data

A number of data sources were used in this study.

Student Record Cards

Data pertaining to students, course enrollments, course completions and statuses were found on student record cards, coded, sorted, and analyzed by a computer.

A randomly selected sample of student record cards were analyzed to determine the turnaround time for students' lessons in the ACS.

Instructors' Weekly Work Reports

All of the data forms completed between June 29, 1975 and June 26, 1976, were coded and analyzed.

A regression analysis procedure was used to compute average lesson marking times in each course. Weekly aggregations of the reports were used to calculate the lesson flow volumes on a monthly basis.

Because of the many variables under consideration, it was easier to use all of the student records and instructors' work reports than to create random samples.

Student Workload

Logs of the time students required to complete lessons (Appendix 4) were analyzed to assess the student workload per course and to develop course/lesson quality indicators.

Questionnaires

A questionnaire (Appendix 5) was used to obtain a measure of attitudes towards correspondence, an indication of personal locus of control, reasons for enrolling in correspondence study, other alternatives available to students, and reading styles.

The study population consisted of those having an interest in correspondence education, either directly (through teaching or studying) or indirectly (through supervision or administration of correspondence students). Ten random samples of the population were selected: principals of schools where some students used correspondence study; teachers at the ACS; four groups of in-school correspondence students and, four groups of adult correspondence students. The four student groups consisted of: those who had successfully completed the course in which they were enrolled, those who had completed approximately 80 percent of the course and had been inactive for at least two months; those who had completed 3 or 4 lessons and had been inactive for at least two months; and, those who had summitted no lesson and their registrations were at least two months old. The samples were drawn in May, 1976 and from all high school and adult students who had registered between August, 1975 and February, 1976.

Printing Records

Existing printing section records were used to determine the costs of printing and lesson distribution.

Observations

A number of observations were made in order to analyze the lesson flowpath through the ACS and to focus on routine functions such as record maintenance and mail handling.

Data Analysis

All of the data obtained from the Student Record Cards, Instructors' Weekly Work Reports, and the questionnaire were transferred to IBM 80 column coding forms, key punched in the facilities of Student Evaluation and Data Processing Services, and analyzed by computer.

All of the remaining data were collected, classified, and analyzed manually.

PART I

COST-BENEFIT ANALYSIS OF THE ACS

Part I of the study presents a framework for conducting a cost-benefit analysis and then applies that framework to a comparison of the Alberta Correspondence School with the regular school system.

COST-BENEFIT ANALYSIS OF THE ACS

The Program of Instruction at the ACS

The Alberta Correspondence School was established in 1923 in an attempt to offer children, who could not attend regular classrooms, instruction in reading, writing, and arithmetic (Sherk, 1976, Appendix 6). As outlined by Sherk, the Alberta Correspondence School continued to grow--the supply of courses responding to the demand. During the latter part of the '40's the greatest demand was for elementary instruction. Since 1955, the demand has increasingly shifted to high school instruction.

The following is a summary of some of the factors which influence the supply of courses. Sherk's paper provides further amplification.

The decision to develop and offer a new course is generally based on the requests of individuals or groups. Justification for a new course occurs when these demands increase in volume and span an extended period of time.

Requests may be for: courses which are part of the general curriculum but not offered by the ACS; courses which serve to upgrade students for particular purposes (employment, further education, etc.); or for courses which are of general interest.

An example of an upgrading type of course is to be found in the practical mathematics series. This course was developed, with the cooperation of the Alberta Apprenticeship Board, to prepare candidates with the mathematics requirements of the Apprenticeship Programs. This same course is currently undergoing revision in order to prepare students for metrication.

The inclusion of Ukrainian in the ACS catalog of courses is a result of applied political pressure principally from the Alberta Ukrainian Society.

On another occasion, the Supervisor of Home Economics with the Alberta Department of Education requested that the ACS expand their courses in this area to fill a perceived deficiency in the regular schools.

The selection of junior high group "B" options and general interest courses reflects both the interests and skills of the ACS staff and requests of students.

In each of these cases, the senior administration of the ACS made the final decision to add the courses. Because there are few specific policies in this area, considerable discretion is exercised.

Appendix 7 provides a list of the courses offered by the ACS during the 1975-76 school year.

Framework for a Cost-Benefit Analysis

There presently exists an extensive body of literature supporting the view that human resources are improved by education--investment in education is a way of increasing human capital. In this study correspondence study and regular classroom study are treated as alternate forms of educational investment.

The demand for educational services may stem from two needs--consumption or investment. For purposes of this study courses offered by the ACS have been divided into two categories:

- all elementary and junior high school courses, and,
- all senior high school and adult courses.

Both categories contain investment and consumption courses. These will be discussed later. Only courses in the second category were treated as having a measurable stream of benefits extending into the future and therefore useful in a cost-benefit equation.

The internal rate of return has been generally accepted as a means of measuring the return to investment in education (Thomas, 1971:22; Sheehan, 1973:34). More recently, it has been recognized that this tool can also be used to evaluate the rate of return of different forms of education (Stager, 1969). By calculating the internal rates returned to investment in correspondence education at the ACS, we are endeavoring to compare the returns to this investment with that received in the regular education system.

All students in elementary and junior high school are legally bound to attend school. Moreover, most of these students are too young to be eligible for inclusion in the labor market. The minimum age regulations for entrance into the labor market causes these students to have very low opportunity costs for their time spent in obtaining an education. The result is the benefits, or rate of return, to their education become inordinately high. For these reasons elementary and junior high school students were eliminated from rate of return calculations.

This study concentrates on the returns to education for those students taking senior high school and adult courses through the ACS. Over 90 percent of all student enrollments at the ACS fall into this category. There are two types of students taking these senior high school and adult courses at the ACS: those who are attending a school and taking one or more courses from the ACS; and, students who are not attending a school.

It has been assumed for this study that those students who are enrolled only at the ACS are working and are taking courses in their leisure time whereas students registered in a regular school are full-time students and, hence, unemployed. This distinction becomes important when calculating the cost of education in that those students who are full-time students are foregoing possible earnings in the labor force. These foregone earnings must be added to the cost of obtaining additional education. Students who are outside the regular school system and taking courses through the ACS may maintain full time employment thus not incurring this additional cost. The importance of this point can be more appreciated when it is noted that a number of studies have found that the cost of foregone earnings comprises well over 50 percent of the cost of secondary and post-secondary education (Poduluk, 1968). Other direct cost items which are assumed to be applicable to both types of students include costs such as: teachers' salaries, materials, maintenance and up-keep of the schools, as well as imputed costs for taxes and interest not paid by the ACS. Other costs of obtaining additional education are those incidental student expenditures such as books, tuition, and postage which the correspondence student must pay.

The economically quantifiable benefits of further education consist of the gains in productivity from that additional education. This increased productivity is reflected in higher wages for those with more education and it is these wage differentials which are used as a measure of the benefit to further education. It would be incorrect, however, to attribute the entire wage differential between two levels of education to education alone as other factors such as intelligence, ability, and opportunity account for some of this differential (Denison, 1962). A number of people have tried to separate out these influences, leaving only that part of the differential which is accounted for by education, but with varying results. However, they generally agree that the porportion of the wage differential due to education ranges from about 60 to 75 percent.

For the purposes of this study it was decided to treat 66 percent of all wage differentials as a benefit of further education. The benefits from this education accrue over a long period of time, ususally until retirement age which for this study has been set at 65 years. Thus, the benefits to accrue in the future must be discounted back to a present value for accurate comparisons. Other factors include the participation rate in the labor force after one has received the education and the possibility of a person dying before reaching the age of 65. As the necessary data are usually only available on an annual basis, calculations are based on this interval but due to the fact that many students do not attend the ACS for a full year of studies it was necessary to break the cost of benefits down to the course level in the high school program. It was assumed that a course would be completed within a one year period and therefore all costs are incurred in that year, hence, no discounting of costs is necessary.

Two other problems arose which had to be dealt with. Most other studies have dealt with only the benefits and costs accruing to the male portion of the population because of the usually low participation rate of females in the labor force (Becker, 1964). However, due to the increasing participation rates of females in the labor force and in view of the fact that the greatest proportion of students at the ACS are females, it was evident that they must be included in this study. Another problem lies in the fact that a number of students attending the ACS do not reside in Alberta and therefore it may be unreasonable to believe that the benefits from their education would accrue to the people of Alberta even though they are heavily subsidizing this education.[1] For students in provinces immediately around Alberta and the North-West Territories, it may be argued that because of the high rate of immigration into Alberta some of the benefits of this education would likely accrue to Albertans. As well, there are a number of foreign students (that is students residing outside the borders of Canada) who are taking courses at the ACS. It is not clear how Albertans will derive benefits from increased education for these people On the other hand, many may be Albertans who are temporarily residing abroad.

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[1] Most students from outside Alberta are working on a program in Alberta and will return to Alberta at some later date.

There are a number of costs and benefits which have to this point in time had no satisfactory means of quantification. These include the general spillover or indirect benefits from education and the value of foregone leisure to students who are studying. The value of foregone leisure is particularly relevant in the case of students who are taking their education only at the ACS and working full time inasmuch as their studies must be completed in what would otherwise be their leisure time. It is also recognized that there are a number of spillover benefits from education throughout the community--increased quality of leadership and a more knowledgeable community which also tends to be a better electorate. Some of these benefits may involve value judgements on the part of policy makers. The more obvious spillover effect is in the increased productivity of workers. This can be observed when we see the general productivity of all members of a community increased because of the increased education of some of the members of the community. Finally, some contend that a better education results in the need for less law enforcement (Blaug, 1968).

It is argued by many (Wiseman, 1965; Blaug, 1968) that education also involves psychic returns to the person being educated with these psychic returns somewhat analogous to a consumption return and in general considered positive. Blaug (1968) has questioned whether this assertion may come about due to the perspective of the investigator. It is argued that the investigator who has the benefit of a higher education is more appreciative of higher education while a person having not yet benefitted from this education may not feel that psychic returns from continuing education are necessarily positive. It would seem quite likely that for some people in our society, continuation of their education beyond the minimum requirements results in a certain disutility and the only reason they continue is because of parental or social pressure. It has also been suggested that preferred methods of teaching may have different psychic returns to an individual depending on his or her preferences. This may be a very important consideration for the ACS. If this last assertion is true, some individuals may find that correspondence education is more attractive than the regular school program. If this should prove true a great benefit may lie in the fact that because of increased alternatives more people are encouraged to extend their education than has been the case in the past.

Completion of the cost benefit analysis necessitated answering a number of intermediate questions.

1. Who derives benefit from the ACS and what are these benefits?
2. What is the value and cost of these benefits and how do they compare to other forms of education?
3. Are there alternate ways of obtaining these benefits?
4. To what extent should consumption courses be subsidized?

Sources of Data

Data for this section were derived from a literature review, Statistics Canada, student records, questionnaires, accounts and records of the ACS, and from the SBOA 1975 School Finance Study prepared by the School Business Officials of Alberta.

Findings

Benefits

The ACS provides the same benefits as any school offering comparable levels of instruction. Students benefit through their increased ability to function successfully in society and more specifically they become more productive members of the labor force. The increased productivity leads to that individual being able to command a greater amount of goods and services for his labors. As well, the community at large benefits from the ACS, as it does from all educational institutions, through a series of spillovers or externalities. The most significant of these benefits is the increased productivities of workers employed beside the more educated person. The community also benefits through having persons with increased leadership ability, a better informed electorate, and a general increase in the standard of living.

The preceding benefits while they are central to educational investment decisions do not provide insight into the particular benefits associated with correspondence education--benefits both to the individual student and to groups in society. A consideration with older students is the fact that they need not leave the labor force to continue their education. This becomes a key factor when it is realized that foregone earnings account for more that one-half of the cost of education at the high school or post-secondary level. The cost of further education is therefore reduced for both the individual and the community when correspondence education is employed and earnings are not foregone.

The ACS also provides unique benefits to students who cannot readily access schools. This may occur when the student is medically confined, residing in a region not serviced by a school, or when the student is temporarily out of the province. A correspondence school serving a wide range of needs over a wide geographical area would appear to be more economical than many other alternatives. Were it not for correspondence education, many of these students would require individualized programs, or high transportation and/or residential costs.

Classroom students who are taking one or more courses by correspondence benefit to varying degrees depending on their reasons for choosing correspondence study. The benefit may be in the opportunity to take a course not otherwise available in the local schools' curriculum or because of a time table conflict. This may be very important for those students attending smaller rural high schools who need particular prerequisites for attendance at higher educational institutions or for employment. There may also be some benefit to the local school authority which is relieved of the pressure of providing certain low enrollment courses in their schools.

The flexibility of correspondence instruction is also an advantage over other forms of education, particularly for adult students who find a rigid time table of school classes difficult or impossible to work into their schedules. Adult students employed in shift work or employment with uncertain hours find it difficult to attend regularly scheduled day or night classes but can easily find time in their day for correspondence study. The opportunity to advance one's education through correspondence study is becoming of increased value as the accelerated pace of technical advancement requires the labor force to be continually exchanging skills and abilities. The ability to acquire new skills on a continuing basis during the life-time of the worker is perhaps a most important benefit derived from the ACS.

The benefits mentioned to this point are the result of a return on the investment in human capital provided through education. There are also those who claim that a comsumption benefit is derived by the student who acquires an education. Most writers tend to assume this benefit to be positive, however, this may not be the case for all students. Just as the value of the consumption benefit may vary between individuals it may also vary for the same individual between various institutions. It is therefore possible that different students will obtain a different level of benefit from correspondence study. One can only guess at these differences as attitudes of in-school and adult students are compared in the attitude survey discussed in a later section.

Table 1 describes the number of students serviced by the ACS in the 1975-76 school year. Table 2 shows the number of enrollments or course registrations. Table 3 pinpoints the origin of the demands for correspondence instruction by school jurisdiction and by subject level.

Value and Cost of Benefits

The benefits and costs which have been quantified into dollar

Table 1

Number of Students Enrolled in Summer and Winter Correspondence Programs (1975-76)

Frequency XXX
Row Pct XXX
Col Pct XXX
Total Pct XXX

	Summer	Winter	Total
Male	405	8178	8583
	4.7	95.3	100.0
	33.8	43.3	42.8
	2.0	40.7	42.8
Female	793	10693	11486
	6.9	93.1	100.0
	66.2	56.7	57.2
	4.0	53.3	57.2
Total	1198	18871	20069
Row Pct	6.0	94.0	100.0

Table 2

Course Enrollments in Summer and Winter Correspondence Programs (1975-76)

Frequency XXX Row Pct XXX Col Pct XXX Total Pct XXX	Summer	Winter	Total
Male	467	11535	12002
	3.9	96.1	100.0
	33.7	42.5	42.1
	1.6	40.4	42.1
Female	920	15614	16534
	5.6	94.4	100
	66.3	57.5	57.9
	3.2	54.7	57.9
Total	1387	27149	28536
Row Pct	4.9	95.1	100.0

Table 3

Distribution of Correspondence Enrollments by Zone and Subject Levels

Frequency XXX
Row Pct XXX
Col Pct XXX
Total Pct XXX

	Elem.	Jr. High	Grade 10	Grade 11	Grade 12	Adult	Retro Credit	Total	Enrol. Ratio [1]
Zone 1	0	71	758	320	189	2	0	1340	48.5
	0.0	5.3	56.6	23.9	14.1	0.1	0.0	100.0	
	0.0	2.7	6.6	5.5	3.7	0.1	0.0	4.7	
	0.0	0.2	2.7	1.1	0.7	0.0	0.0	4.7	
Zone 2	0	99	1245	555	319	6	1	2225	80.1
	0.0	4.4	56.0	24.9	14.3	0.3	0.0	100.0	
	0.0	3.8	10.8	9.5	6.3	0.2	0.1	7.8	
	0.0	0.3	4.4	1.9	1.1	0.0	0.0	7.8	
Zone 3	0	145	1078	437	221	5	2	1888	31.8
	0.0	7.7	57.1	23.1	11.7	0.3	0.1	100.0	
	0.0	5.6	9.4	7.4	4.3	0.2	0.2	6.6	
	0.0	0.5	3.8	1.5	0.8	0.0	0.0	6.6	
Zone 4	28	320	993	411	254	1	1	2008	58.1
	1.4	15.9	49.5	20.5	12.6	0.0	0.0	100.0	
	17.5	12.3	8.6	7.0	5.0	0.0	0.1	7.0	
	0.1	1.1	3.5	1.4	0.9	0.0	0.0	7.0	
Zone 5	4	275	643	326	231	3	0	1482	64.4
	0.3	18.6	43.4	22.0	15.6	0.2	0.0	100.0	
	2.5	10.6	5.6	5.6	4.5	0.1	0.0	5.2	
	0	1.0	2.3	1.1	0.8	0.0	0.0	5.2	
Zone 6	0	308	635	326	177	0	1	1447	33.3
	0.0	21.3	43.9	22.5	12.2	0.0	0.1	100.0	
	0.0	11.9	5.5	5.6	3.5	0.0	0.1	5.1	
	0.0	1.1	2.2	1.1	0.6	0.0	0.0	5.1	
Edmonton	2	27	804	436	284	9	0	1562	15.8
	0.1	1.7	51.5	27.9	18.2	0.6	0.0	100.0	
	1.3	1.0	7.0	7.4	5.6	0.4	0.0	5.5	
	0	0.1	2.8	1.5	1.0	0.0	0.0	5.5	
Calgary	0	13	472	191	133	1	0	810	7.8
	0.0	1.6	58.3	23.6	16.4	0.1	0.0	100	
	0.0	0.5	4.1	3.3	2.6	0.0	0.0	2.8	
	0.0	0.0	1.7	0.7	0.5	0.0	0.0	2.8	
Adult & Other	126	1337	4889	2865	3296	2389	868	15770	12.9*
	0.8	8.5	31.0	18.2	20.9	15.1	5.5	100.0	
	78.8	51.5	42.5	48.8	64.6	98.9	99.4	55.3	
	0.4	4.7	17.1	10.0	11.6	8.4	3.0	55.3	
Total	160	2595	11517	5867	5104	2416	873	28532	17.5**
Row Pct	0.6	9.1	40.4	20.6	17.9	8.5	3.1	100.0	

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[1] Enrollments per 1000 of the school-age population.

* Adults and other includes the entire population except school enrollments and younger.

**Includes the entire population above school-entry age.

values in this study include the value of the increased productivity due to increased education and the savings due to a person not having to leave the labor force to obtain their schooling. These values are estimated on the basis of data from the 1971 Canadian Census and adjusted upward for comparison to 1975 dollars.

The increased productivity was estimated by using income differentials for various age and education achievement levels. Income differentials are assumed to reflect the value of the increased output resulting from the higher education. It has been shown that to attribute the full value of the differential to education would be incorrect. Denison (1962) estimated that about 66 percent is attributable to education. The remaining 34 percent can be attributed to such things as native ability, home environment, father's occupation, and standing in one's school class. Therefore, adjustments have been made to compensate for these factors.

The benefits to education accrue over the lifetime of the student and thus must be discounted to their present value for comparison with the present cost of obtaining that education. In the present value calculations adjustments are also being made for persons not completing their studies and thus not entitled to a stream of benefits; persons not participating in the labor force; and persons dying before they reach retirement age. The retirement age has been set at 65 years for this study and benefits are calculated only to that point. This may lead to a slight underevaluating of these benefits but, due to the high degree of discounting and because of low participation rates in the labor force beyond this age, the error will be slight.

The benefit from students not having to forego participation in the labor force enters as a reduction in the cost of providing education to correspondence students. The net present value and the internal rate of return have been calculated for the educational investment at the ACS.

Rate of Return Calculations

Parker (1975) outlined a model for calculating the present value of educational benefits to age 65 which served as the basis for these cost-benefit computations. The modified model calculated net benefit as follows:

$$\text{Net benefit} = (Nm \times pm \times \Sigma Em) + (Nf \times pf \times \Sigma Ef) - [(Nm + Nf)(AC + IC + SE + FE)]$$

Where Nm = number of FTE male students

pm = probability of males completing studies

ΣEm = males lifetime earning differential resulting from one more year of secondary education.

Nf = number of FTE female students

pf = probability of females completing studies

ΣEf = female lifetime earnings differential resulting from one more year of secondary education

AC = expenditures reported in annual budgets

IC = imputed costs including taxes and interest

SE = student expenditures including books, materials, postage

FE = foregone earnings

The total number of FTE students (Nm plus Nf) were calculated by dividing the total number of high-school lessons submitted (178,394) by 120 (the number of lessons associated with 30 credits). The resultant (1487 FTE students) was prorated on the basis of the male/female enrollment distribution--40.4 percent males and 59.6 percent females. Students in regular classrooms were assumed to be distributed in the same manner for purposes of these calculations.

The probabilities of completing correspondence studies (pm and pf) were based on data derived from an analysis of student records and are related to total enrollments. The average in-school completion rate was estimated to be 90 percent--85 percent for males and 95 percent for females.

The earnings differentials were calculated to age 65. The in-school students sampled by the attitude survey had an average age of 17.1 years. The out-of-school sample had an average age of 25.4 years. The streams of earnings were adjusted to allow for the part attributable to education (66 percent (Denison, 1962)), mortality, labor force participation rates and the probability these students would complete their studies.

For those students taking part of their high school program by correspondence while also enrolled in regular instruction, it was assumed that of a 30-credit workload 7.5 credits would be by correspondence and 22.5 credits would be by regular instruction. Lifetime earnings, costs and completion ratios were adjusted accordingly.

Accounting costs were derived from expenditures reported in operating budgets (Table 4). For in-school students the average per pupil costs at the senior high school level were found to be $1615 (School Business Officials of Alberta, 1976). It was assumed that a FTE student would be taking 30 credits. An FTE student with 25 credits

Table 4

Distribution of ACS Budget Expenditures by Instructional Levels and Items of Expenditure

Frequency XXX
Row Pct XXX
Col Pct XXX
Total Pct XXX

	Instructional			Operating				
	Course Development	Marking	Other	Admin & Clerical	Facilities	Gov't Services	Promotional	Total
Elementary	39221	30430	14878	12405	9775	2327	1277	110313
	35.55	27.59	13.49	11.25	8.86	2.11	1.16	100.00
	15.60	2.71	4.30	2.71	2.71	2.71	2.71	4.14
	1.47	1.14	0.56	0.47	0.37	0.09	0.05	4.14
Junior High	44831	145433	24239	59289	46720	11119	6103	337734
	13.27	43.06	7.18	17.55	13.83	13.83	1.81	100.00
	17.83	12.98	7.01	12.98	12.98	12.98	12.98	12.66
	1.68	5.45	0.91	2.22	1.75	0.42	0.23	12.66
Senior High	167430	944989	306483	385246	303573	72249	39658	2219628
	7.54	42.57	13.81	17.36	13.68	3.26	1.79	100.00
	66.58	84.31	88.68	84.31	84.31	84.31	84.31	83.20
	6.28	35.42	11.49	14.44	11.38	2.71	1.49	83.20
Total	251482	1120852	345600	456940	360068	85695	47038	2667675
Row Pct	9.43	42.02	12.96	17.13	13.50	3.21	1.76	100.00

was assumed to cost 5/6 of $1615 while a 35-credit load was assumed to cost 7/6 of $1615. The costs for correspondence study were calculated by dividing the total high school expenditure at the ACS ($2,219,628) by the number of FTE students (1487) and found to be $1493. A 25-credit load was estimated to cost $1244 while a 35-credit load was estimated to cost $1742 (5/6 and 7/6 respectively of the FTE student cost).

Imputed costs were derived from the accounts and records and found to be $4.50 per 5-credit correspondence course. There were no imputed costs attributed to regular instruction.

Student expenditures include $5.00 per 5-credit course for books and materials while postage was estimated to cost $6.00 per 5-credit course for correspondence students only.

Foregone earnings were based on data published by Statistics Canada. A year of high-school education was estimated at 30 credits (6 courses). These foregone earnings were reduced to course level figures by dividing the earnings increments by 6. The value of $34.90 of foregone earnings per course appears low but takes into consideration the low employment rate for this age group. On the basis of data gathered in conjunction with the attitude survey, it would appear that 88.5 percent of the in-school students are unemployed.

Lifetime earnings differentials and foregone earnings were calculated on the basis of 1971 data. The remaining costs used in the cost-benefit equation were derived from 1975 data. To adjust the two sets of figures for purposes of comparison, the 1971 figures were increased by 1.3055--the increase in the overall Consumer Price Index for the Edmonton/Winnipeg regions from 1971 to 1975.

The net benefit calculations for five discount rates (3,5,7,9, and 11 percent) are presented in Appendix 8 and summarized in Figures 1-7.

Alternatives to Correspondence Instruction

Given that educational opportunity should be provided to those now attending the ACS, then one means of looking at the benefits of the present institution would be to examine the cost of the least expensive alternative. Due to the wide range of students who are served by the ACS and thus an equally wide range of least cost alternatives, these costs have not been calculated. However, specific examples can be cited to indicate the position faced if correspondence study was not available.

1. Increase the curriculum offerings and timetable variations in smaller high schools. Alternately, choose to provide only a narrow range of educational possibilities to students in sparsely settled ares.
2. Provide alternate facilities for the medically confined.
3. Provide alternatives for those in regions without schools.
4. Provide opportunities for adult upgrading.
5. Increase school facilities and staff on the Hutterite colonies.

Subsidization of Consumption Courses

The costs incurred by a student earning 30 credits by correspondence study was computed to be $1493. The overall completion rate for ACS enrollments was found to be 25.3 percent. This amounts to a real cost of $5901 for a completed 30-credit course. With a 90 percent completion rate in the regular school system, a comparable program would cost

Figure 1

A Comparison of Social Returns to Investment
Education - Status Quo

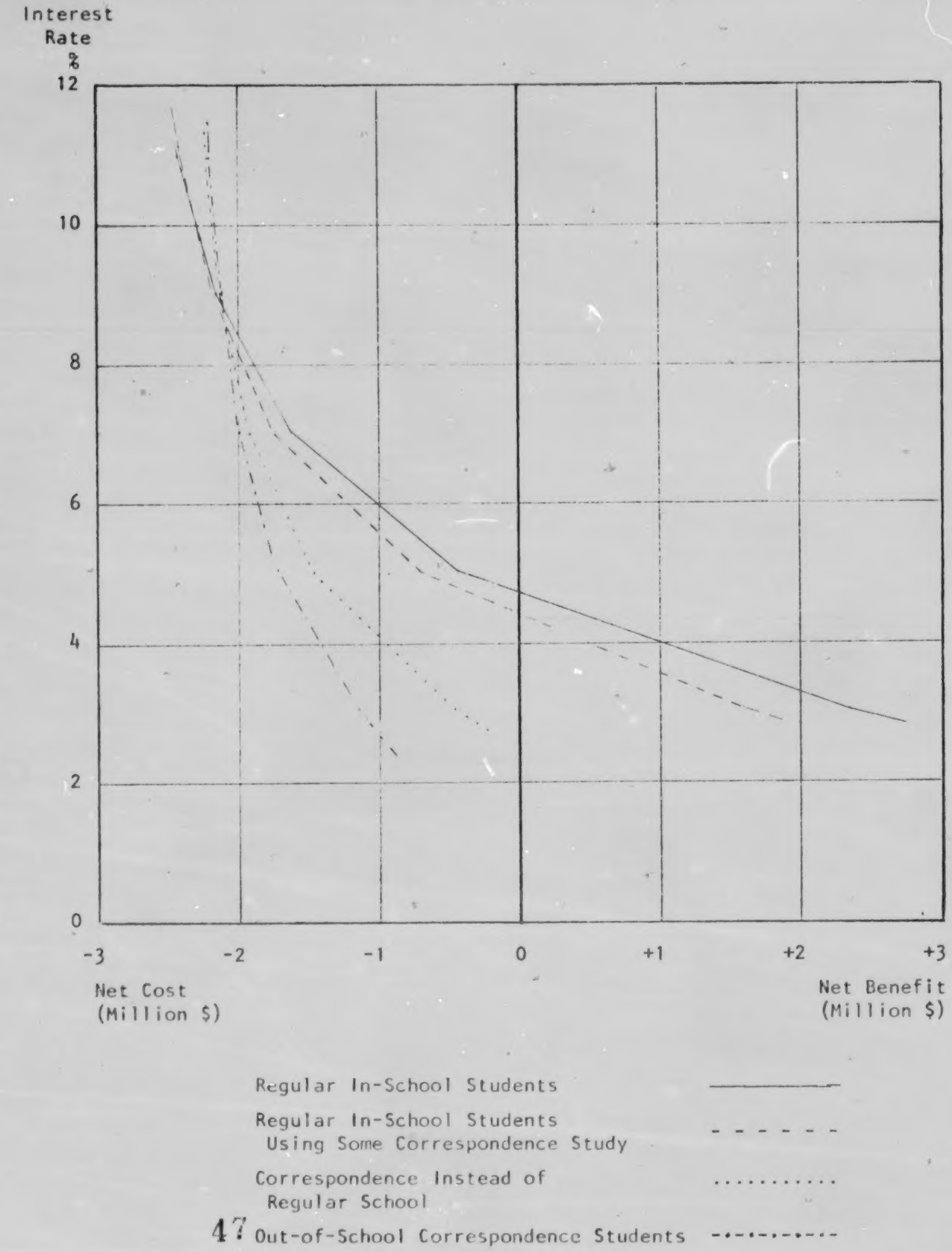


Figure 2

A Comparison of the Effects of Improved Completion Rates for Correspondence Study on Social Returns to Investment in Education

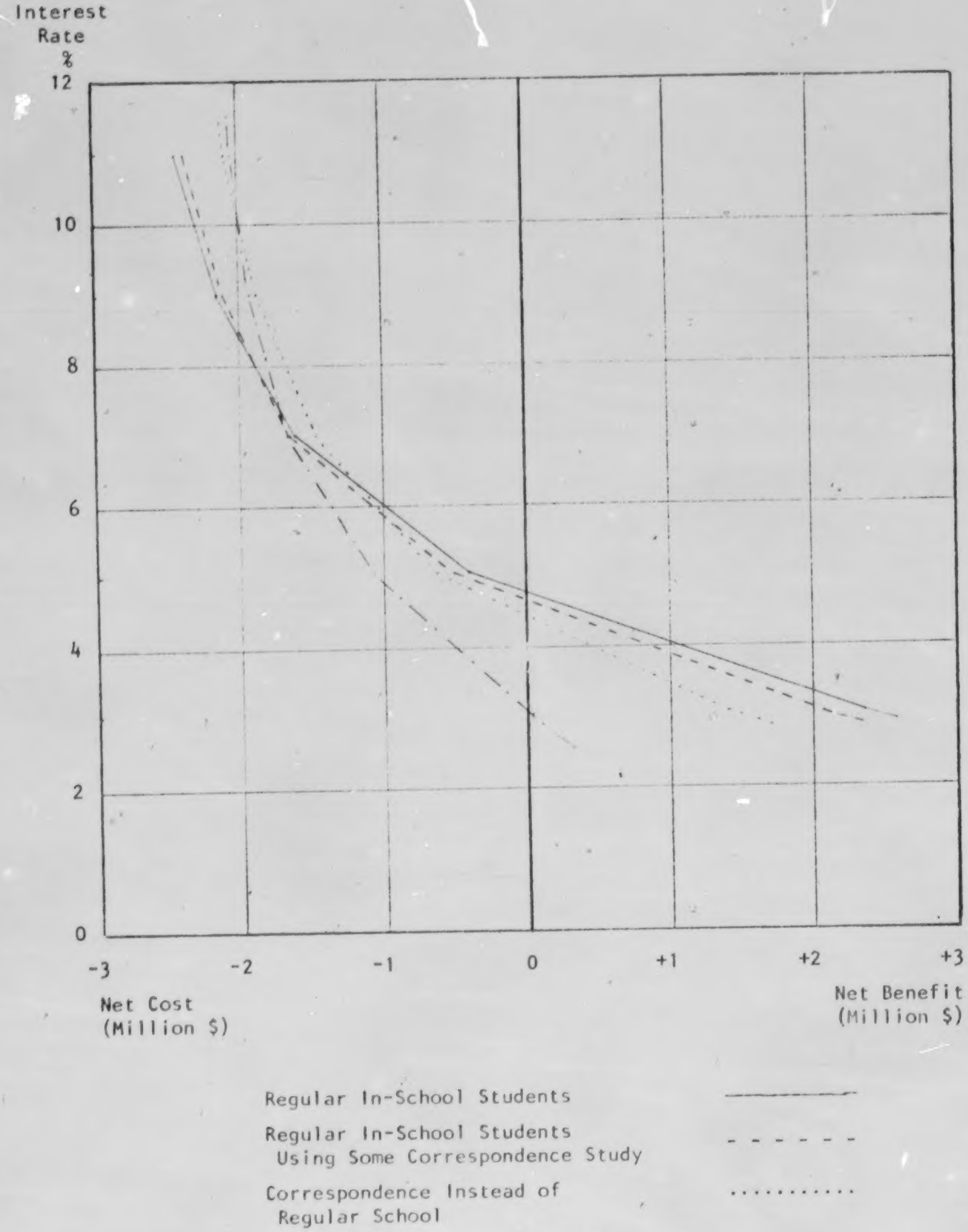


Figure 3

A Comparison of the Effect of Reduced Costs of Correspondence Study on the Social Returns to Investment in Education

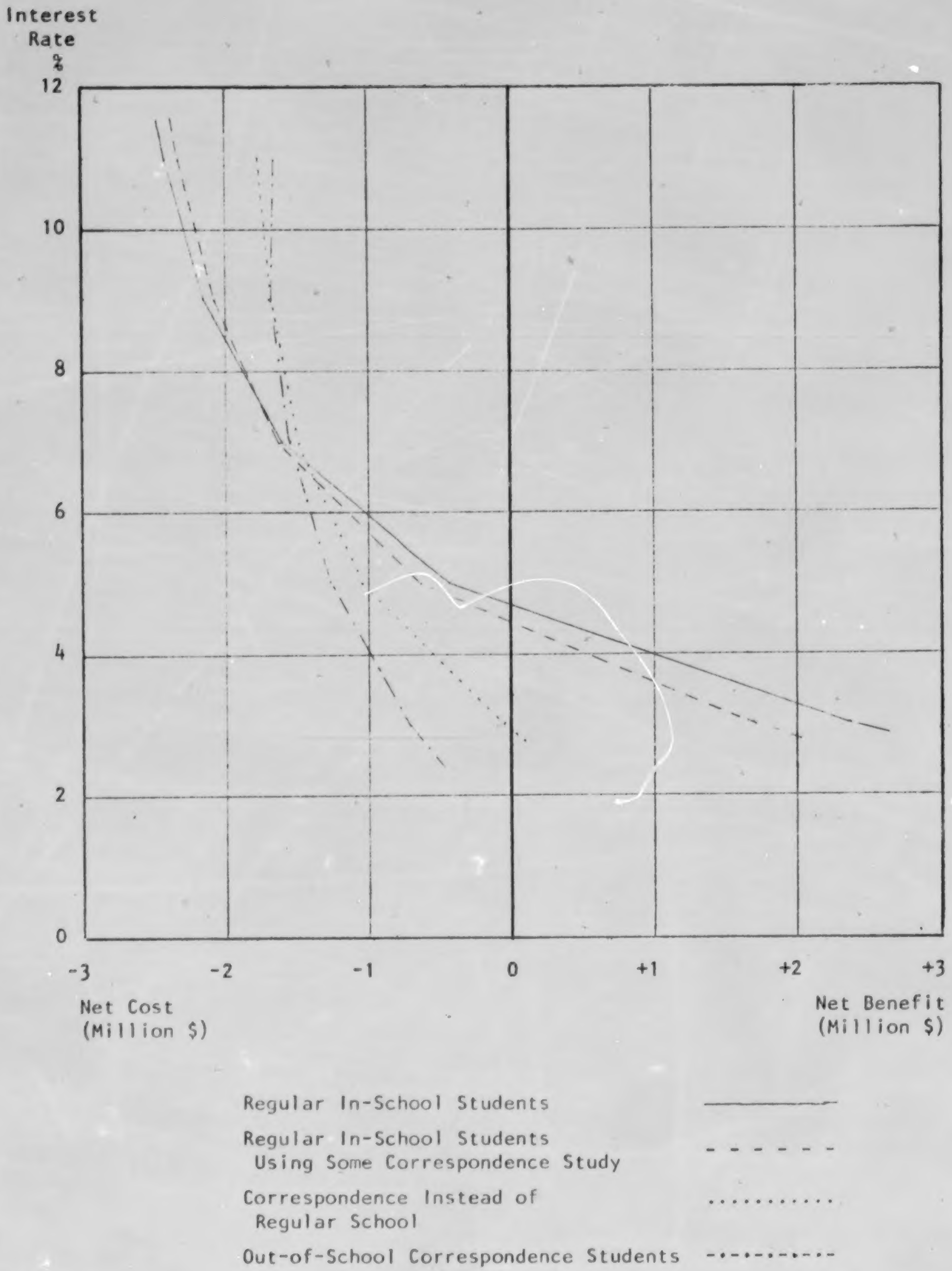


Figure 4

A Comparison of the Combined Effects of Improved Completion Rates and Reduces Costs of Correspondence Study on the Social Returns to Investment in Education

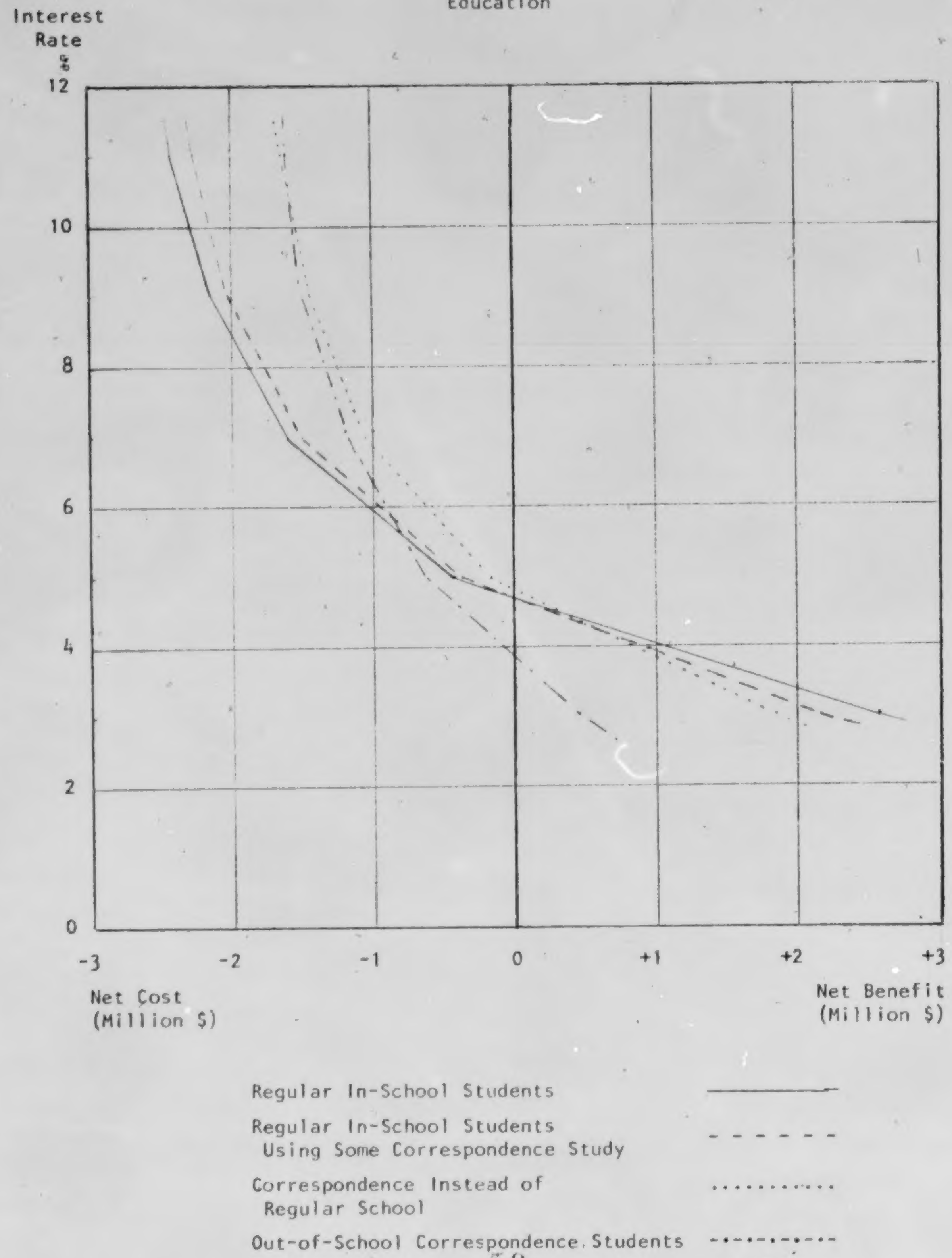
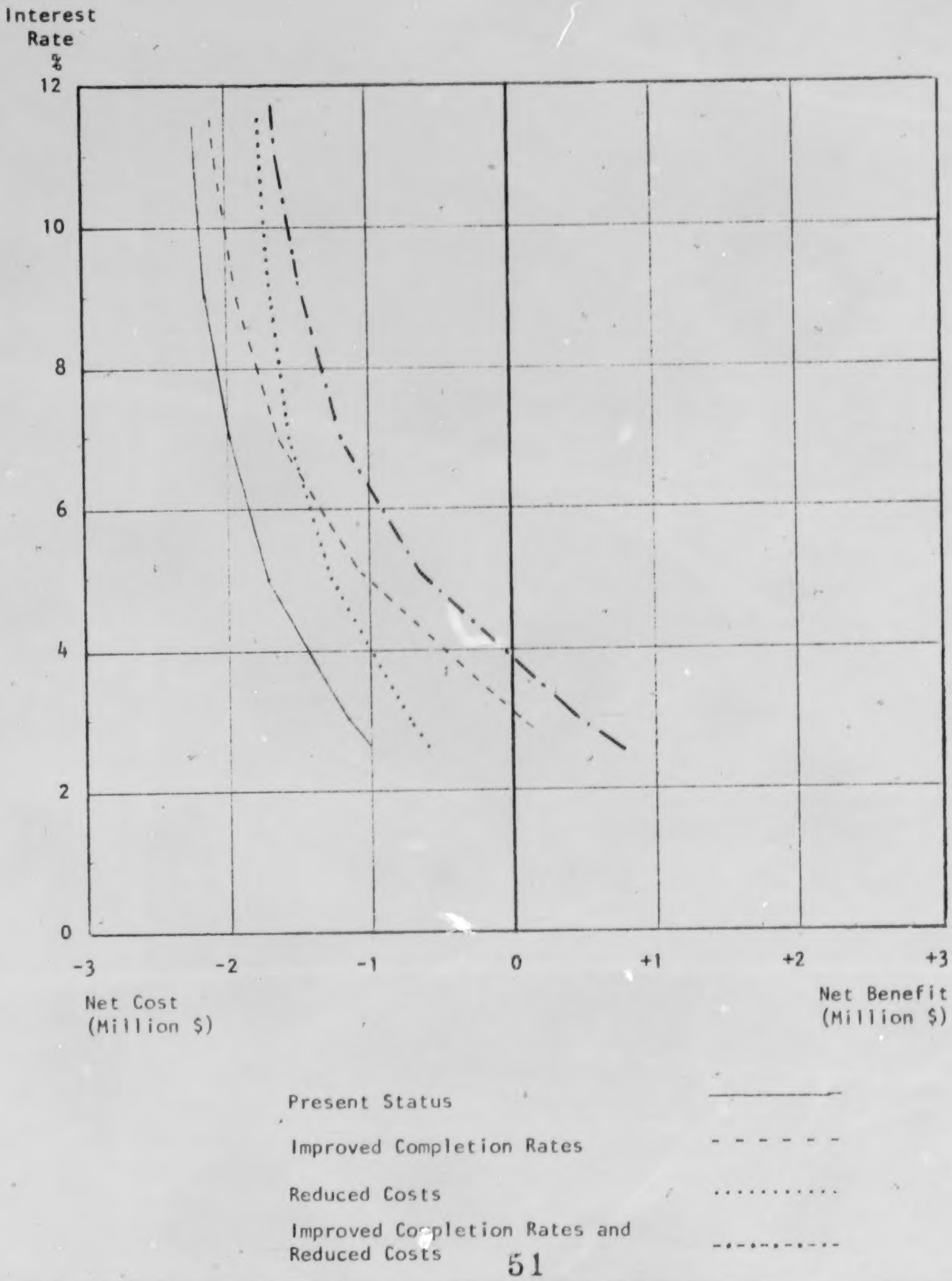


Figure 7

A Comparison of Factors Affecting Out-of-School Students Taking Their Program by Correspondence Study



$1794 and a 5-credit course would cost $299.

Having decided to offer consumption courses to those past the school-leaving age means choosing between regular classroom instruction or correspondence study. Choosing correspondence study as an alternative means that course costs may be as much as 3.29 times higher than in the regular system. Moreover, because these are consumption courses there are no streams of benefits associated with them. At present the costs of consumption correspondence courses (apart from a normal registration fee) are borne by the Department of Education.

Discussion

Cost-benefit and rate of return calculations are difficult at best. Assumptions have to be made and judgements exercised to such an extent that the findings are frequently suspect. Many such problems occurred in this study. It was assumed that:

1. An FTE student takes 30 credits per year.
2. There are no differences in the quality of education derived from regular classroom study or correspondence study. This assumption is not supported by findings of Childs (1966), Mathieson (1975) or Macken (1975) who all contend that correspondence students are better prepared for subsequent study than are regular students. The assumption is necessary, however, because the difference cannot be measured in monetary or economic terms.
3. Courses obtained by either of the two means require the same amount of time (foregone leisure or foregone earnings).

As discussed in a subsequent section this is apparently not true. Correspondence study requires less student time than regular instruction.

4. No costs or benefits were excluded from the cost-benefit equation that could grossly distort the findings.
5. Students enrolled as in-school students are full-time students and for the most part unemployed. Out-of-school students are employed and taking correspondence courses in their leisure time.

A comparison of the four types of students identified in Figure 1 points up a problem that is general to education. Only at relatively low discount rates (under 4.5 percent) are there positive benefits from increased high school education and then only to regular schools. By extrapolation one could argue that students on full-time correspondence programs yield a benefit only at discount rates of less than 2 percent. For out-of-school students using correspondence study, there is no benefit. The low returns to correspondence education for adults appears to derive principally from the low completion rates.

When the completion rates are doubled for correspondence students (to 66 percent for in-school students and 38 percent for out-of-school students) the benefits are as shown in Figure 2. Correspondence study for in-school students yields a benefit approximately equal to regular education. Correspondence study for out-of-school students (with improved completion rates) yields benefit at discount rates approaching 3 percent.

A 20 percent reduction in the costs of correspondence instruction would result in the benefits shown in Figure 3.

Figure 4 describes the case when the cost of correspondence instructions are reduced at the same time that completion rates are improved.

It is interesting to note that at higher discount rates (about 8 percent) the net loss derived through correspondence instruction is less than that for regular instruction. Stated another way, when discount rates exceed approximately 8 percent (the present state of the economy) correspondence instruction becomes a less costly alternative. When discount rates are low, the regular school system appears to provide the least costly alternative.

For those in-school students who are taking a part of their program (1.5 courses out of a total course load of 6 courses) by correspondence, neither improved completion rates or reduced costs have a major impact on the benefits derived at any specific discount rate (Figure 5). On the other hand, for students (either in-school or out-of-school) who are taking a complete program by correspondence major benefits are derived from improved course completion (Figures 6 and 7). As well, the combined effects of reduced costs and improved completion rates can be seen in those figures.

It is extremely important to recognize that the net benefits reported in this study were substantially lowered by including females in the computations. Most of the other studies which were examined excluded females from cost-benefit calculations. Their inclusion is justified, however, on the basis of the fact that there are increasing numbers of females in the labor force.

It is equally important to note an unmeasured benefit attributable to the female segment of the population, that being the effect of an educated housewife and mother on future generations of children.

Conclusions and Recommendations

Conclusions

A cost-benefit analysis, based on an internal rate of return, of the Alberta Correspondence School has been developed and contrasted with the regular system of instruction. A number of factors emerge from this comparison. The discount rate used in an internal rate of return analysis may be market-derived (inflation, CPI, prime lending rates), but it also presents a "view of the world" (personal or subjective time, preference rates, uncertainty). Accordingly some caution needs to be used in drawing conclusions about the ordinality of calculated benefits.

Bearing in mind the foregoing caveats, investment in neither regular instruction nor correspondence instruction yields positive benefits at discount rates higher than 4.5 percent. Inclusion of females in the calculations tended to lower the net benefits. At interest rates in excess of 8 percent, correspondence instruction and not regular instruction becomes the best investment.

Low completion rates in correspondence study as presently offered reduce potential benefits to a net loss for interest rates above 2 percent.

The cost-benefit equation is sensitive to changes in completion rates and reduced costs of correspondence instruction. With improved completion rates and reduced costs, correspondence study could become a strong and viable alternative at interest rates above approximately 5.5 percent. If correspondence instruction is to be offered under any circumstances, this last observation justifies an intense examination of the effectiveness and efficiency of the ACS.

Recommendations

It is recommended that:

1. Correspondence study be considered an alternative form of education for all non-school students and for in-school students, expecially where high instructional costs prohibit the offering of a diversified program of studies.
2. Ways and means of reducing costs of correspondence study be examined.
3. Ways and means of improving correspondence completion rates be examined.
4. Ways and means of improving the cost effectiveness of regular instruction be examined.

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PART II

EFFECTIVENESS AND EFFICIENCY ANALYSES OF THE ACS

The cost-benefit equation discussed in Part I was sensitive to changes in both correspondence student completion rates and costs of correspondence instruction. For that reason this second part of the study has been devoted to an analysis of the effectiveness and efficiency of the ACS.

Because of organizational complexity the effectiveness and efficiency of the ACS could not be assessed by a single study. Rather, a number of independent studies were conducted and are reported herein.

The several studies into costs focused on: the cost of correspondence instruction, alternatives for lesson marking, and, teacher productivity; course development, printing and distribution costs and alternatives; and, costs of operating an independent facility.

A second set of studies focused on the processes used in delivering correspondence instruction. Included in these studies were examinations of: lesson volume and staffing patterns; student motivation; curriculum assessment mechanisms; student work loads; attitudes towards correspondence study; student performance; and student incentives.

These separate studies are reported in the following sections. While obvious conclusions and recommendations are discussed in each section, a synthesis of the findings is presented in the final section together with final conclusions and recommendations.

INSTRUCTIONAL COSTS AT THE ACS

An important component of the effectiveness and efficiency of the Alberta Correspondence School (ACS) is instructional cost.. Instructional cost is derived from several sources--course development, printing and distribution, and marking--and each must be analyzed.

The following questions were used as a guide in this section of the study:

1. How do instructional costs (per pupil, per course) compare with instructional costs in regular schools and with other correspondence schools?

2. What is a reasonable level of productivity (marking rate in different subjects and grades)? For teachers?

3. What is an appropriate marking fee for contracted lesson marking in different subjects and grades.

Sources of Data

Data pertaining to instructional costs were obtained from three sources. Records maintained in the printing department yielded costs for course development and printing. Distribution costs were obtained from Personnel and the mailroom. Marking costs were determined by analyzing Instructors' Weekly Work Reports.

Findings

Cost of Instruction

Expenditures for the 1975 fiscal year were first analyzed and then assembled for comparison to other correspondence schools. Table 4 (page 30) reflects distribution of the ACS budget by instructional levels and items of expenditure. The expenditures by the ACS include expenditures made by Government Services on behalf of the ACS and cover items of operation and maintenance.

Instructional costs were derived by prorating the total instructional costs on the basis of the distribution of teachers' hours as determined by the analysis of the Instructors' Weekly Work Reports. Operating expenditures and Government Services expenditures were prorated on the basis of lesson volumes (workloads) in each instructional level.

Table 5 presents per pupil expenditures for the ACS compared to regular school expenditures. The regular school expenditures were derived from the SBOA 1975 School Finance Study. Full time equivalent students were calculated as follows: an elementary FTE student = 33 lessons, a junior high FTE student = 120 lessons (6 courses of 20 lessons each), and a senior high FTE student = 120 lessons (6 courses of 20 lessons each).

Table 6 compares budget distributions among a number of correspondence institutions.

Rates of Productivity

For those courses with relatively high lesson volumes, a regression analysis procedure was used to calculate the average lesson marking rates. To derive an average marking rate in a particular course, the average marking times for each teacher in that course were first combined and the average computed. Secondly, the weekly marking rate was calculated by

Table 5

Comparison of 1975 Per Pupil Costs Between The Alberta Correspondence School and Regular Instruction

Level	Lesson Volume	FTE Students	ACS Expenditures	ACS Per Pupil Cost	SBOA Per Pupil Cost
Elementary	2372	72[1]	110313	1532	1358
Junior High	36729	306[2]	337734	1104	1425
Senior High	178394	1487[2]	2219628	1493	1615

[1] FTE student = 33 lessons

[2] FTE student = 120 lessons

Table 6

Percentage Distribution of Budget Expenditures: A Comparison

Items of Expenditure	College and University			Private Home Study Schools			USAFI	ACS
	Medium-sized Programs		Large Programs	Medium-sized Schools		Nonprofit Schools	Fiscal Year 1965	Fiscal Year 1975
	Range, %	Mean, %	Range, %	Range, %	Mean, %	Range, %	%	%
Operating cost (total)	32.5-42.8	39.5	35.1-51.0	29.1-38.8	33.7	41.1-na†	21.0	33.8
Administrative and clerical (including wages)	21.0-27.0	26.1	21.6-32.0	nbd§	....	17.3-na	18.0	17.1
Facilities (plant, office supplies, non-promotional mail)	11.5-15.8	13.4	13.5-19.0	nbd	....	23.8-na	3.0	16.7
Instructional cost (total)	49.9-66.0	56.9	43.0-52.2	17.1-28.3	22.8	36.0-51.8	79.0Φ	64.4
Course services (preparing, correcting, grading, testing)	46.9-62.0	53.6	40.0-48.0	12.0-22.3	17.4	nbd	nbd	42.0
Course development and revision	3.0-4.0	3.3	3.0-4.2	5.1-6.0	5.4	nbd	nbd	9.4
Other	....	....	....	....	....	....	....	13.0
Promotional cost (total)	1.0-5.1	3.4	3.5-4.2	30.6-58.9	43.5	7.1-50.0	0	1.8
Advertising and promotion (including promotional mail)	1.0-5.1	3.4	3.5-4.2	15.6-30.0	21.2	nbd	0	nbd
Sales representatives (salaries and expenses)	0	0	0	15.0-28.9	22.3	nbd	0	nbd

*CERP survey information taken from a selective survey of universities, private home study schools, and USAFI. Survey samples are limited and indicate general patterns, not statistically accurate or exhaustive results.

†na=not available.
§nbd=not broken down.
Φ=This figure includes 8 percent for USAFI testing program, 3 percent for participating college program, and 1 percent for dependents' schools program.

Based on: Ossian McKenzie (1968)

dividing 36.25 (working hours per week) by the average time to mark a lesson. Table 7 shows average lesson marking times and productivity levels for selected high school courses.

Because most teachers also perform other duties and did not mark lessons exclusively an adjustment factor may be applied if a teacher is expected to mark lessons on a full time basis. The adjustment factor might fall to 0.85 and implies that a teacher working at the same task would be expected to be only 85 percent efficient on a continuing task.

Fees for Contracted Marking

To compute the marking fees, the average lesson marking times (discussed earlier) were used. Table 8 shows estimated marking times together with proposed lesson marking fees based on teachers' salaries of $12.000 and $18.000 for 200 days (36.25 hours per week).

Discussion

Much of the data used in these analyses were derived from the Instructors' Weekly Work Reports. Inasmuch as the volume of lesson marking varied markedly during the year (Table 9) standardized volumes were used in the regression analysis. These standardized scores were calculated by the following equation:

$$\text{Standardized Score } (x) = \frac{X - \bar{X}}{S.D.}$$

where - X is the raw score,

- $\bar{X}$ is the mean for the data sample

- S.D. is the standard deviation.

Table 7

Average Lesson Marking Times and Productivity Levels for Selected High School Courses

Course	N	Average Marking Time[1] Per Lesson (Hours)	Marking Rate Per Week Adjusted[2]
Grade 10			
English 10 (1100) (7)	4	0.56	65
English 13 (1115) (2)	3	0.49	74
Social Studies 10 (1150)	4	0.54	67
Mathematics 10 (1200)	4	0.46	78
Mathematics 13 (1216)	3	0.76	48
Mathematics 15 (1225)	10	0.47	77
Physics 10 (1260)	2	0.58	63
French 10 (1300)	3	0.19	190
German 10 (1315)	2	0.58	63
Health and P.D. 10 (1415)	10	0.45	81
Accounting 10 (1501)	6	0.30	121
Record Keeping 10 (1550)	2	0.23	158
Typing 10 (1565)	3	0.27	134
Grade 11			
English 20 (2100)	3	0.63	58
English 23 (2115)	6	0.45	81
Social Studies 20 (2150)	3	0.60	60
Mathematics 20 (2200)	4	0.44	83
Mathematics 23 (2216)	3	0.74	49
Mathematics 25 (2225)	2	0.57	64
Physics 20 (2260)	2	0.77	47
French 20 (2300)	3	0.29	125
German 20 (2315)	2	0.15	243
Accounting 20 (2501)	2	0.54	67
Typing 20 (2565)	2	0.51	71
Grade 12			
English 30 (3100)	7	0.54	67
English 33 (3115)	7	0.67	54
Social Studies 30 (3150)	6	0.53	68
Mathematics 30 (3200)	6	0.53	68
Mathematics 31 (3211)	3	0.77	47
Mathematics 33 (3216)	3	0.74	49
Physics 30 (3260)	3	0.44	82

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[1] Based on teachers who marked at least 50 lessons in the subject and marked for at least 10 weeks.

[2] The marking rate is calculated as follows:

$$\text{Marking Rate} = \frac{36.25}{\text{Ave. Marking Time}}$$ where 36.25 is the time available in a week.

Table 8

Suggested Lesson Marking Fees For Contracted Marking

Course	Marking Time Per Lesson (Hours)	Based On $12,000/yr. Teacher Salary *	Based On $18,000/Yr. Teacher Salary*
Grade 10			
English 10 (1100)	0.56	$ 4.63	$ 6.98
English 13 (1115)	0.49	4.06	6.10
Social Studies 10 (1150)	0.54	4.47	6.71
Mathematics 10 (1200)	0.46	3.81	5.73
Mathematics 13 (1216)	0.76	6.29	9.44
Mathematics 15 (1225)	0.47	3.89	5.85
Physics 10 (1260)	0.58	4.80	7.20
French 10 (1300)	0.19	1.57	2.37
German 10 (1315)	0.58	4.80	7.20
Health and P.D. 10 (1415)	0.45	3.72	5.58
Accounting 10 (1501)	0.30	2.48	3.72
Record Keeping 10 (1550)	0.23	1.90	2.85
Typing 10 (1565)	0.27	2.23	3.35
Grade 11			
English 20 (2100)	0.63	5.21	7.82
English 23 (2115)	0.45	3.72	5.58
Social Studies 20 (2150)	0.60	4.97	7.46
Mathematics 20 (2200)	0.44	3.64	5.48
Mathematics 23 (2216)	0.74	6.12	9.18
Mathematics 25 (2225)	0.57	4.72	7.08
Physics 20 (2260)	0.77	6.37	9.56
French 20 (2300)	0.29	2.40	3.60
German 20 (2315)	0.15	1.24	1.87
Accounting 20 (2501)	0.54	4.47	6.71
Typing 20 (2565)	0.51	4.22	6.33
Grade 12			
English 30 (3100)	0.54	4.47	6.71
English 33 (3115)	0.67	5.54	8.35
Social Studies 30 (3150)	0.53	4.39	6.59
Mathematics 30 (3200)	0.53	4.39	6.59
Mathematics 31 (3211)	0.77	6.37	9.56
Mathematics 33 (3216)	0.74	6.12	9.18
Physics 30 (3260)	0.44	3.64	5.46

* Based on 200 days and 7.25 hours per day.

Table 9

A Comparison of the Effects of Lesson Volumes on Lesson Marking Rates

Sample 1				Sample 2			
Week Ending	Marking Time (Hours)	Lessons Marked	Average Hours Per Lesson	Week Ending	Marking Time (Hours)	Lessons Marked	Average Hours Per Lesson
10/4/75	625	1124	0.56	5/1/76	2614	6589	0.40
10/11/75	736	1366	0.54	5/8/76	2540	6233	0.41
10/18/75	728	1451	0.50	5/15/76	2496	6090	0.41
10/25/75	1222	2280	0.54	5/22/76	2573	6152	0.42
11/1/75	620	948	0.65	5/29/76	2160	5055	0.43
11/8/75	824	1345	0.61	6/5/76	2640	6451	0.41
11/15/75	904	1539	0.59	6/12/76	2746	6996	0.39
11/22/75	996	1707	0.58	6/19/76	2528	6193	0.41
11/29/75	266	580	0.46	6/26/76	2288	5074	0.45
Total	6921	12340	0.56	Total	22585	54833	0.41

In spite of these attempts to obtain more meaningful results, the miltiple r^2 index (the percentage of variance accounted for by the regression equation) was frequently low. Figures 8 to 11 show the cases of four teachers, each marking a single course. Figures 8 to 9 describe cases where the regression equation is almost identical to the calculated average (hours spent marking divided by the number of lessons marked). Figures 10 and 11 describe different cases. In the third case (Figure 10) 13.51 hours per week were spent "marking" even though no lessons were marked. Lessons were marked at the rate of 0.245 hours per lesson thereafter. This is one half of the time required on the average. The fourth case (Figure 11) is similar.

The fact that many of these findings lack the desired integrity (high multiple r^2 indices) may stem from several factors.

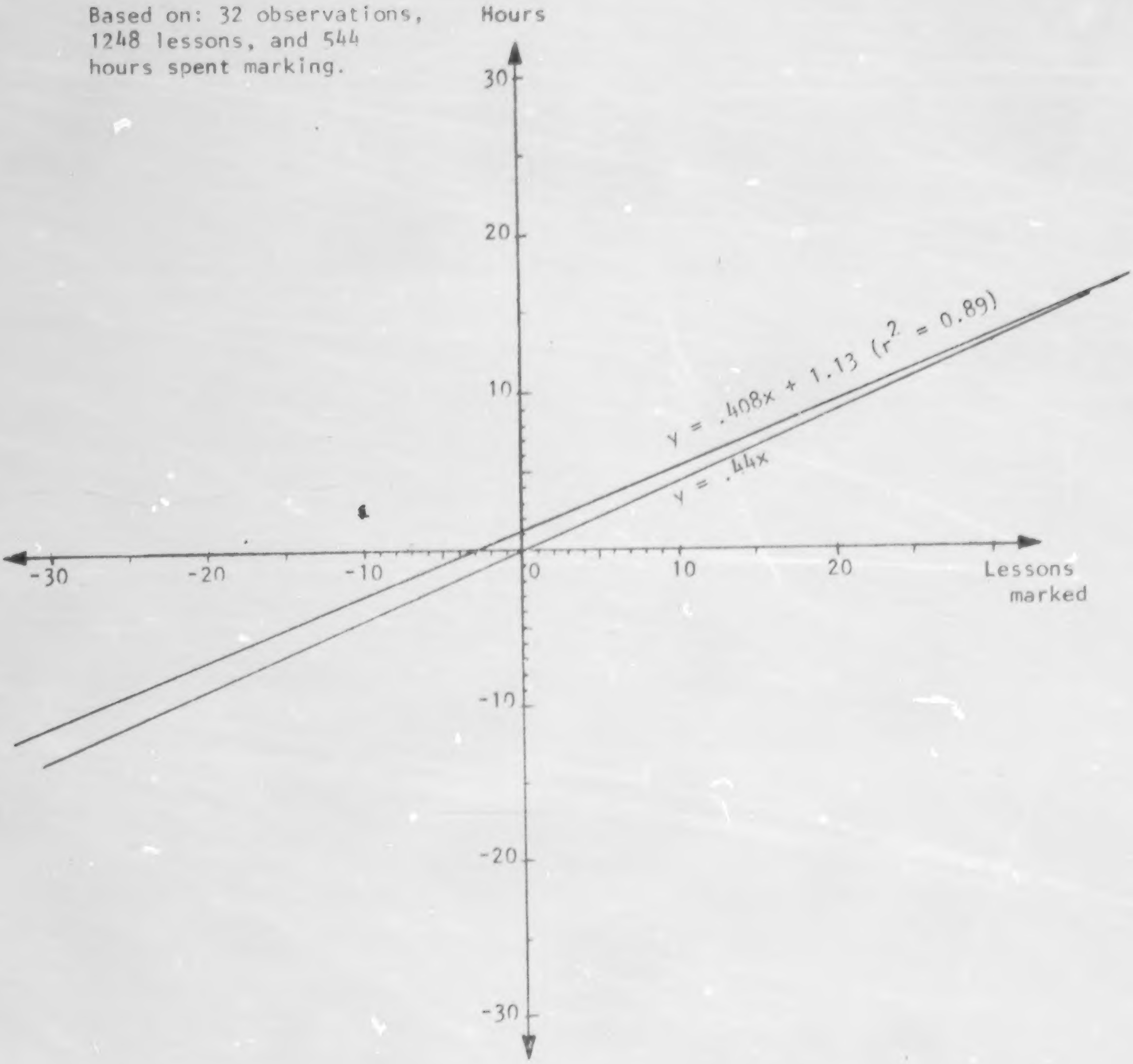
1. Teachers may not be accurately reporting, on the Instructors' Weekly Work Report, the way their working hours are actually allocated.

2. The lesson volume appears to be inversely propertional to marking time. This can be noted by comparing the marking rates in October/November 1975 with those of May and June 1976 (see Table 9). If the October/November rate had prevailed in May and June, a 36 percent increase in teaching staff would have been required. The foregoing evidence tends to confirm "Parkinson's Law"--any job can be expanded to completely utilize available time and manpower.
Though "Parkinson's Law" may describe some variation in productivity, it must be reported that lesson marking did not fluctuate significantly on a day-to-day basis. There were no days during the week when marking rates dropped (or increased) significantly.

3. Teachers may gain experience in marking courses. As experience is gained the time required to mark lessons may decrease.

Figure 8

An Analysis of 1248 Lessons in Health and Personal Development 10 (1415) Marked in 544 Hours Over a Period of 32 Weeks



Based on: 32 observations, 1248 lessons, and 544 hours spent marking.

Figure 9

An Analysis of 716 Lessons In Spanish 14 (1344) Marked In 367 Hours Over a Period Of 44 Weeks

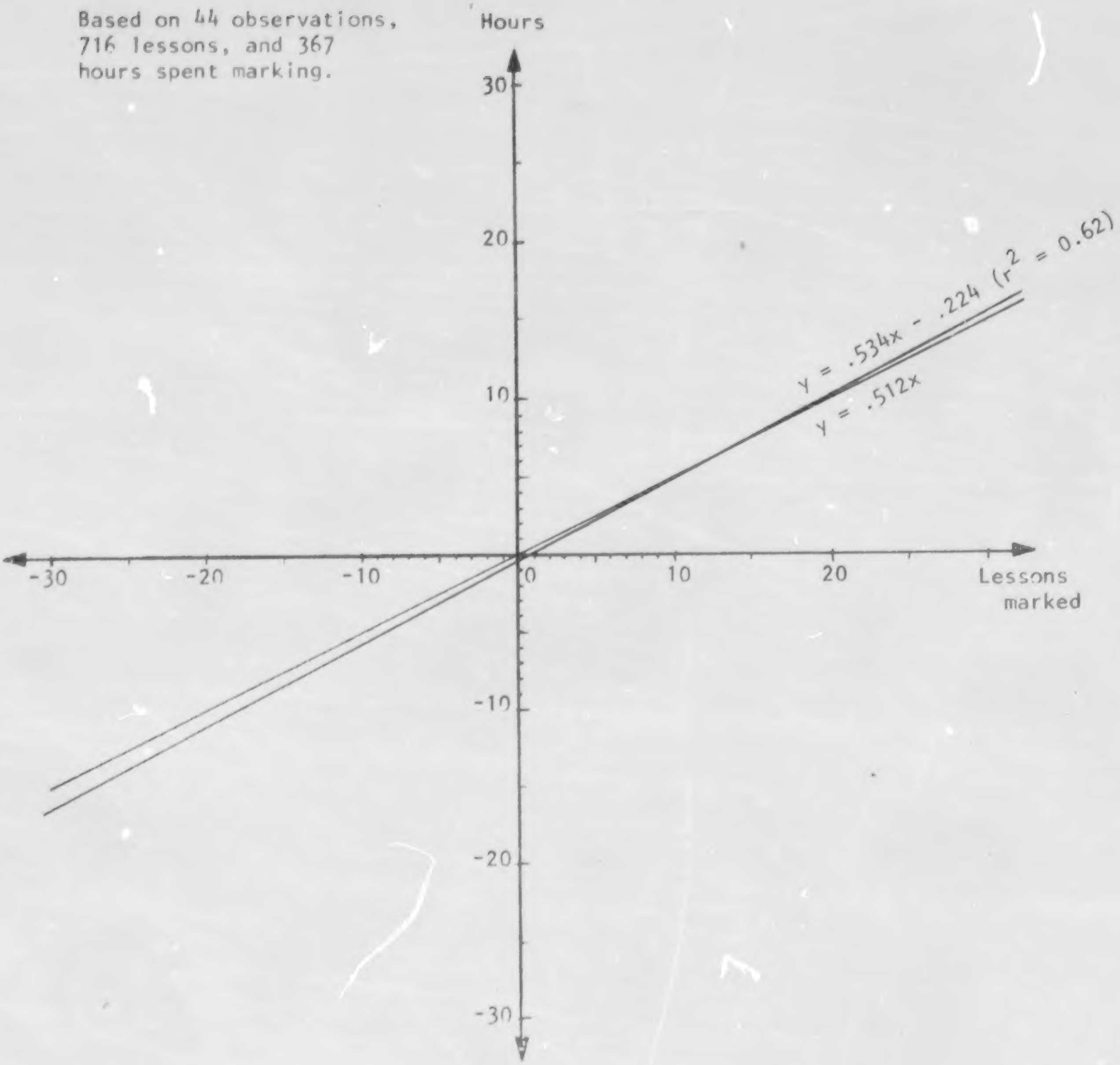
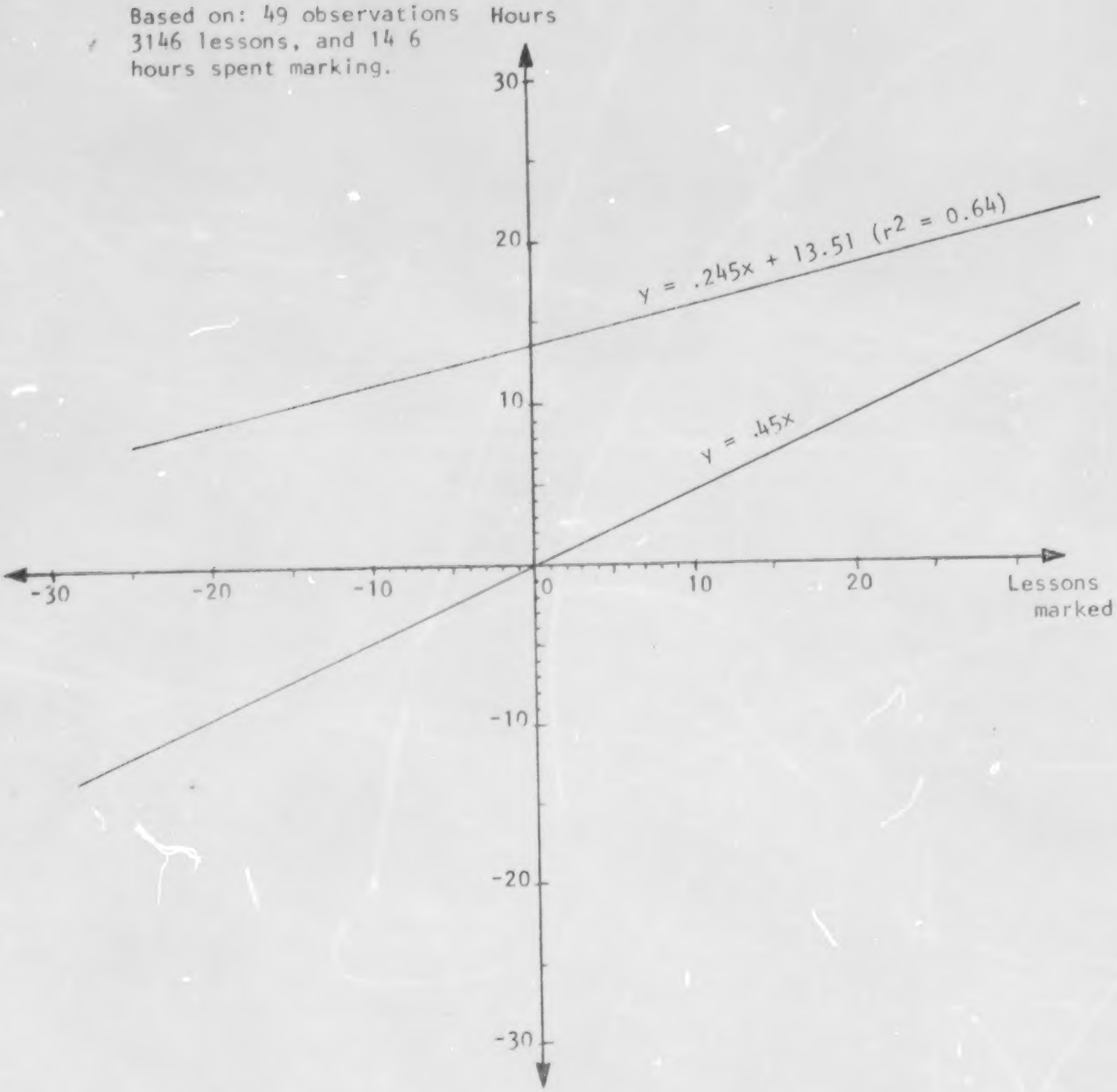


Figure 10

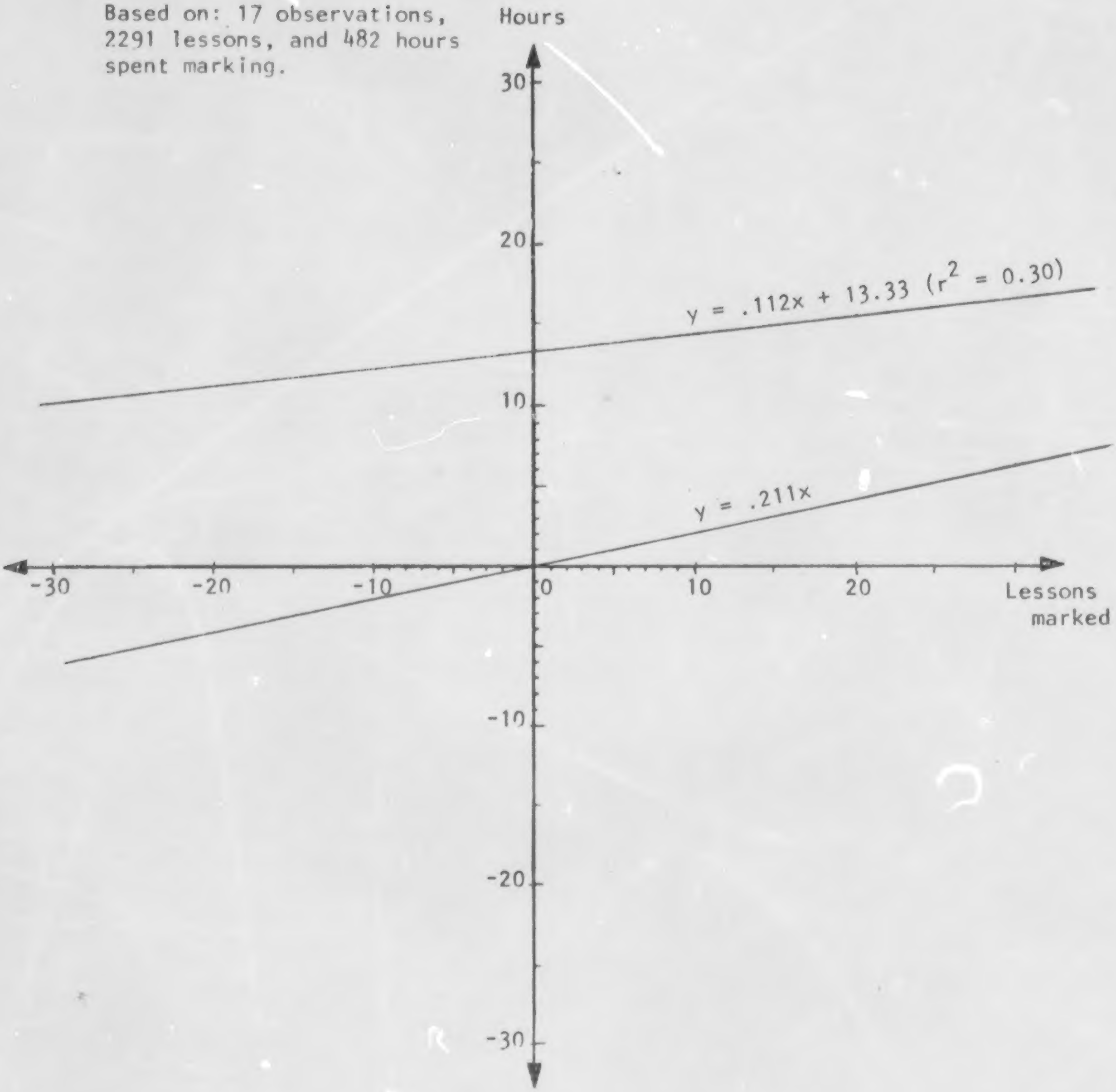
An Analysis of 3146 Lessons In Health and
Personal Development 10 (1415)
Marked in 1406 Hours Over
A Period of 49 Weeks



Based on: 49 observations
3146 lessons, and 14 6
hours spent marking.

Figure 11

An Analysis of 2291 Lessons In Accounting 10
(1501) Marked In 482 Hours Over
A Period of 17 Weeks


Based on: 17 observations, 2291 lessons, and 482 hours spent marking.

Because of these factors, the productivity levels of teachers in different subject areas and the marking fees for contract marking are subject to error. On the other hand, they are based on an extensive amount of data and are useful as preliminary guidelines. Further experience may be used to alter and adjust these guidelines.

On the basis of the findings it is evident that the actual cost of different courses may vary markedly. The effect of this variation in lesson marking rates on course costs is shown in Table 10.

Conclusions and Recommendations

Conclusions

On the basis of the data used in this study, it appears that, with the exception of the junior high program, the ACS costs per FTE pupil for instruction are higher than in the regular school system. There are several reasons that might account for this.

Many courses have low enrollment in which case each FTE student bears an unusually high proportion of the course development cost.

Marking rates in different subjects vary considerably. Marking rates also vary as a result of lesson volume. As a result of these factors some course costs contain an inordinately high marking cost.

Twelve percent of the total instructional time is spent in clerical, administrative and other unspecified activities (see Table 4). in addition, the clerical and support staff adds a significant component to FTE student costs.

Recommendations

A number of recommendations flow from the conclusions.

Table 10

Variations In Course Costs As A Result Of Variations In Marking Time

Course	Marking Time Per Lesson (Hours)	Course Marking Cost [1]	Total Cost Per Course[2]	Average Regular School Cost Per Course[3]
Grade 10				
English 10 (1100)	0.56	139.60	282.47	269.17
English 13 (1115)	0.47	122.00	264.87	269.17
Social Studies 10 (1150)	0.54	134.20	277.07	269.17
Mathematics 10 (1200)	0.46	114.60	257.47	269.17
Mathematics 13 (1216)	0.76	188.80	331.67	269.17
Mathematics 15 (1225)	0.47	117.00	259.87	269.17
Physics 10 (1260)	0.58*	86.40	172.12	161.50
French 10 (1300)	0.19	47.40	190.27	269.17
German 10 (1315)	0.58	144.00	286.87	269.17
Health and P.D. 10 (1415)	0.45*	66.96	152.68	161.50
Accounting 10 (1501)	0.30*	44.64	130.36	161.50
Record Keeping 10 (1550)	0.23*	34.20	119.92	161.50
Typing 10 (1565)	0.27*	40.20	125.92	161.50
Grade 11				
English 20 (2100)	0.63	156.40	299.27	269.17
English 23 (2115)	0.45	111.60	254.47	269.17
Social Studies 20 (2150)	0.60	149.20	292.07	269.17
Mathematics 20 (2200)	0.44	109.60	252.47	269.17
Mathematics 23 (2216)	0.74	183.60	326.47	269.17
Mathematics 25 (2225)	0.57	141.60	284.47	269.17
Physics 20 (2260)	0.77*	114.72	200.44	161.50
French 20 (2300)	0.29	72.00	214.87	269.17
German 20 (2315)	0.15	37.40	180.27	269.17
Accounting 20 (2501)	0.54*	80.52	166.24	161.50
Typing 20 (2565)	0.51	126.60	269.47	269.17
Grade 12				
English 30 (3100)	0.54	134.20	277.07	269.17
English 33 (3115)	0.67	167.00	309.87	269.17
Social Studies 30 (3150)	0.53	131.80	274.67	269.17
Mathematics 30 (3200)	0.53	131.80	274.67	269.17
Mathematics 31 (3211)	0.77	191.20	334.07	269.17
Mathematics 33 (3216)	0.74	183.60	326.47	269.17
Physics 20 (3260)	0.44	109.20	252.07	269.17
Average[4]	0.52	129.10	271.97	269.17

* 3-credit courses

[1] Based on a salary of $18,000 per year (see Table 8)

[2] Expenditure, excluding marking (Table 4) divided by lesson volume (Table 5) and multiplied by number of lessons in course plus marking cost.

[3] Regular per pupil cost divided by 30 credits (FTE load) and multiplied by course credit value

[4] Average for a 5-credit course.

1. Workloads of the ACS staff should be examined to ensure that resources are being utilized to the maximum. As examples: non-certified staff may be used to complete the clerical functions carried out by certified staff; and, word- or text-processors may be used to reduce the amount of time spent in proofreading curricula undergoing development or revision.

2. Reasonable standards for lesson marking may be established for teachers. These standards, or levels of productivity, may be incorporated into the teachers' work plans.

3. The addition of a new course, or the revision of an existing course (except when neccesitated by changes in Provincial policy), should be undertaken only after it is determined that the per pupil costs will not exceed predetermined guidelines.

4. Contracted marking should be considered as an alternative to adding staff when lesson volumes reach peaks. The contracted staff should be paid on a piece rate based on the fee structure recommended.

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COURSE PREPARATION, PRINTING AND DISTRIBUTION COSTS

The previous section focused on lesson marking and teacher productivity as it relates to lesson marking. This section focuses on delivery of instructional packages to students.

The delivery of instruction by a correspondence school results in types of expenditures not encountered in a regular school system. Foremost among these unique expenditures are the costs of printing and distributing instructional materials. Even the development of these courses represents a departure from curriculum development in regular schools.

This section examines the ACS expenditures for course development, printing and distribution over the last four years. Particular attention is given to an optimum lesson delivery policy and to appropriate course fees.

The writing and printing of course materials involves development of new curriculum materials or revision of existing materials. Included in these activities are the costs of developing tests, exercises, and supplemental instructional materials.

The certified staff of the ACS are engaged in the development of instructional materials and in proof-reading. The remainder of the work is done by non-certified staff and includes typing, illustration and art work.

Once a course is developed, or revised, it is printed. Following printing,courses may be distributed for one of two purposes. First, course materials are sent to students registering to take a course. Secondly, course materials may be sold to those who wish to use or review the instructional materials but do not intend to submit lessons for marking--teachers.

Upon registration for instruction, course materials are sent to the registrant and completed lessons are periodically returned by mail for marking. Because no less than 30 percent of the registrants never submit the first lesson it must be assumed that a great deal of the materials printed and distributed by the ACS are wasted. This wastage is included in the previous cost-benefit calculations and serves to reduce net benefits to the ACS.

This section of the study has been directed toward answering the following questions.

1. What are the costs of development, printing and distribution of courses offered by the ACS?
2. What is the most efficient distribution policy?
3. What is an appropriate fee for sets of lessons sold to teachers and others (exclusive of marking)?

Sources of Data

Data needed to answer these questions were derived from student records, ACS accounts, printing records, and from the SBOA 1975 School Finance Study.

Findings

Course Preparation Costs

Course development, printing and distribution expenditures for the last four fiscal years are presented in Tables 11, 12 and 13. All of these expenditures have been adjusted and are reported in 1975

Table 11

Course Development Costs

	72-73	73-74	74-75	75-76
Certified staff	103,310	69,781	76,845	74,221
(1975 dollars)	145,460	90,087	88,218	74,221
Non-certified staff	22,876	18,001	27,830	27,054
(1975 dollars)	32,209	23,239	31,949	27,054
Total	126,186	87,782	104,675	101,275
(1975 dollars)	177,611	113,309	120,166	101,275
Enrollments	27,612	28,176	28,382	28,536
Average cost per course (1975 dollars)	6.43	4.02	4.23	3.55

Certified staff per course enrollment (Four year average)	$3.53
Non-certified staff per course enrollment (Four year average)	$1.02
Development costs per course enrollment (Four year average)	$4.55

Table 12

Course Printing Costs

	1972-73 Printing Records	1972-73 Expenditure Accounts	1973-74 Printing Records	1973-74 Expenditure Accounts	1974-75 Printing Records	1974-75 Expenditure Accounts	1975-76 Printing Records	1975-76 Expenditure Accounts
Printing (Salaries, etc.)	25,391	36,288	20,106	42,443	31,971	52,404	45,192	82,819
(1975 dollars)	(35,751)	(51,094)	(25,957)	(54,794)	(36,703)	(60,160)	(45,192)	(82,819)
Materials	32,740	36,731	26,274	45,577	46,622	54,130	58,244	67,293
(1975 dollars)	(46,098)	(51,717)	(33,920)	(58,840)	(53,522)	(62,141)	(58,244)	(67,293)
Total	58,131[1]	73,019	46,380[1]	88,020	78,593[1]	106,507	103,436[1]	150,112
(1975 dollars)	(81,848)	(102,811)	(59,877)	(113,634)	(90,225)	(122,301)	(103,436)	(150,112)
Course Registration	27,612		28,176		28,382		28,536	
Cost/Registration (1975 dollars)	2.96	3.72	2.13	4.03	3.18	4.31	3.62	5.26

[1] This figure does not include expenditures for repairs, capital costs, adminstration and accounting as well as an underestimation of wages and benefits. See Table 18.

Table 13

Course Distribution Costs

	72-73	73-74	74-75	75-76
Salaries & benefits	40,708	46,913	52,085	64,972
Postage	53,953	56,313	56,118	71,205
Packaging	1,432	2,242	5,064	1,481
Total	96,093	105,468	113,867	137,658
(1975 dollars)	(135,254)	(136,054)	(130,947)	(137,658)
Enrollments	27,612	28,176	28,382	28,536
Costs/enrollment (1975 dollars)	4.90	4.83	4.61	4.82

dollars: all subsequent discussion is based on these 1975 dollars. Further, the expenditures are expressed on a course enrollment basis. The course enrollment base rather than an FTE student or a lesson base is used because courses are the basic units of sale.

The developmental costs (Table 11) are derived from records prepared in the printing section and are divided into certified and non-certified salary expenditures. Development costs tend to vary from year to year because the need to develop or revise courses varies from year to year. For that reason the average cost per course enrollment was calculated as a four year average and found to be $4.55. Of this 77 percent represents certified labor and 23 percent non-certified labor. Because no materials have been included in these calculations the average course cost of $4.55 represents the lower limit of the true costs.

The analysis of the Instructors' Weekly Work Reports revealed that a total of 13.5 man years of certified staff time was spent in course development in the 1975-76 school year. This amounts to approximately $200,000 - almost three times the amount shown in printing records and reported in Table 11. This may be due, at least in part, to the high amount of recent course development carried out at the elementary level and which may not yet be reflected in the records of the printing section.

Printing Costs

Expenditures on salaries and materials in the printing section are presented in Table 12. The supportive date were found in printing section records and in the records maintained by the accounting section. An examination of Table 12 reveals that printing costs have been increasing over the past four years with the most significant increase (approximately 22 percent) occuring in the last year.

It must also be noted that the capital costs, repairs and other items noted in Table 18 (page 81) are not included in the printing costs presented in Table 12. Together these elements would add approximately $1.08 to the cost of each course registration.

Distribution Costs

The principal component of the distribution costs are salaries and postage and are presented in Table 13. Postage represents the largest single element of the distribution costs and have remained relatively constant over the last several years. Where variations occur, at least part of the variation can be attributed to changes in postal rates.

Fees for Courses

Based on the present volume of enrollments at the ACS, courses on the average cost $14.63 per registration or course unit. Because of all the limitations and exceptions discussed earlier this figure must be regarded as the absolute lower limit of the true cost.

Lesson Distribution Policy

No less than 30 percent of the students who register at the ACS fail to submit the first lesson. In other words, only 70 percent are ever used. To issue an initial 5-lesson package to enrollees (with the remainder of the course to be shipped upon successful completion of the first two or three lessons) looks like a promising alternative but entails simultaneous cost reductions and increases.

The printing facility would experience reduced costs because of a decrease in materials used, a decrease in printing time, and a decrease in storage requirements (volume). At the same time there would be added costs because of additional collating, binding, and a doubling in the inventory of items to be stored.

The distribution section would experience only rising costs primarily as a result of increased postage, increased packaging materials, and increased record-keeping which requires additional staff.

Assuming that only students completing two lessons are to receive the second shipment of instructional material and that all students registered in 3/5 credit courses are taking the course for 3 credits, it is possible to analyze the effect of a two-part shipment of lessons. The resultant changes are analyzed in Tables 14 to 16.

The savings from a decreased use of paper are computed on the basis of 1975 paper prices. The savings in printing costs (labor) were calculated as 75 percent of the material cost reported in Table 17.

Table 14

Lesson-Pack Cost Changes

Grade 10 Courses

	Enrolled	Started	Pages Section 1	Pages Section 2	Pages Saved	Collating Units Saved	Collating Units Added	Postage Increase
1100 Eng 10	308	1[illegible]7	44	97	10767	111	197	5
1115 Eng 13	533	414	29	49	5831	119	414	-73
1150 Soc S 10	542	316	62	55	12430	226	-	-38
1200 Math 10	528	370	84	211	33338	474	-	82
1216 Math 13	381	238	64	191	27313	286	238	- 2
1225 Math 15	990	765	60	207	46575	675	-	91
1230 Biol 10	250	103	98	70	10290	147	250	28
1240 Chem 10	218	102	67	71	8236	116	-	-12
1260 Phys 10	265	104	84	90	9090	101	-	21
1300 Fr 10	216	145	47	182	12922	142	145	- 1
1315 Ger 10	334	244	58	155	13950	180	-	-27
1325 Latin 10	76	51	37	100	2500	25	51	2
1344 Span 14	161	91	89	255	17850	210	-	- 5
1355 Uk 10	161	119	114	203	8526	84	161	29
1400 Art 10	408	303	31	38	3990	105	303	6
1415 Health 10	1505	1111	119	137	53978	394	1505	199
1426 Music 12	39	31	84	52	416	8	-	7
1435 Occup 10	111	68	89	115	4945	86	-	8
1715 Dftg 10	220	157	62	69	4347	63	-	- 4
1565 Typing10	468	311	36	41	6437	157	311	-84
1537 Bus F 10	259	201	67	82	4756	58	-	36
1916 Hort 10	68	55	67	201	2613	39	-	8
1800 Ag 10	31	20	87	366	4026	55	-	- 2
1621 Mod. Lv. 10	140	102	53	140	5320	76	-	-16
1836 Bld'g C 12	98	77	48	213	4473	42	77	7
1550 Rec-K 10	642	549	72	100	9300	93	549	3
1601 Cl & T 10	14	12	68	186	372	4	-	2
1611 Food 10	78	53	95	229	5725	50	12	11
1501 Acct'g 10	1232	1010	86	135	29970	444	-	208
Total	10276	7379			360286	4570	4213	489

Table 15

Lesson Pack Cost Changes

Grade 11 Courses

	Enrolled	Started	Pages Section 1	Pages Section 2	Pages Saved	Collating Units Saved	Collating Unites Added	Postage Increase
2100 Eng 20	283	169	65	114	12996	114	169	25
2115 Eng 23	509	320	56	154	29106	278	-	-65
2141 Comm 21	17	5	41	65	780	12	-	- 3
2143 Lit 21A	63	46	47	40	680	17	46	- 9
2150 Lit 21B	6	6	41	51	-	-	6	
2160 Soc S 20	306	151	78	193	29915	465	-	6
2165 Geo 20	186	114	39	63	4536	72	-	-41
2175 Soc 20	281	149	62	201	26532	264	149	-35
2200 Math 20	385	216	85	235	39715	507	-	25
2216 Math 23	349	231	80	176	20768	236	-	34
2225 Math 25	353	282	88	242	17182	213	-	77
2230 Biol 20	181	88	98	59	5487	93	181	21
2240 Chem 20	146	84	70	77	4774	62	-	- 4
2260 Phys 20	188	117	55	57	4047	71	-	-17
2275 Phys 22	17	13	65	54	216	4	-	- 1
2300 Fr 20	127	83	89	247	10868	132	-	16
2315 Ger 20	78	60	168	274	4932	54	-	8
2325 Latin 20	4	1	63	133	399	6	-	- 1
2355 UK 20	15	12	90	227	681	9	15	3
2430 Law 20	428	268	72	97	15520	160	268	44
2565 Typing 20	249	165	33	131	11004	84	165	- 8
2501 Acct'g 20	527	341	46	153	28458	372	-	-94
Total	4698	2921			268596	3225	999	-19

Table 16

Lesson-Pack Cost Changes

Grade 12 Courses

	Enrolled	Started	Pages Section 1	Pages Section 2	Pages Saved	Collating Units Saved	Collating Units Added	Postage Increase
3100 Eng 30	751	380	86	85	31535	371	-	171
3115 Eng 33	565	378	54	102	19074	187	378	35
3150 Soc S 30	618	365	79	228	57684	759	-	52
3180 Econ 30	228	143	47	227	19295	255	-	- 7
3200 Math 30	498	283	78	213	45795	645	-	35
3211 Math 31	302	197	82	224	23520	315	-	37
3216 Math 33	268	167	69	167	16867	202	-	-27
3230 Biol 30	275	137	116	166	22908	276	-	-21
3240 Chem 30	185	88	54	203	19691	194	88	-19
3260 Phys 30	226	161	69	194	12610	130	161	19
3275 Phys 32	18	11	57	256	1792	21	-	- 2
3300 Fr 30	164	99	96	239	15535	195	164	15
3315 Ger 30	77	59	52	120	2160	18	59	8
3325 Latin 30	6	5	67	192	192	2	5	1
3365 UK 30	13	9	67	163	652	8	-	- 1
3400 Art 30	120	91	33	129	3741	29	91	5
3545 Off Prac 30	109	84	77	154	3850	50	-	16
3537 Bus F 30	130	80	84	149	7450	100	-	10
Total	4553	2737			304304	3757	946	327

Table 17

Lesson-Pack Cost Changes

	Grade 10	Grade 11	Grade 12	Total
Total enrollments	10276	4698	4553	19527
Total starters	7379	2921	2737	13037
Units saved	2897	1777	1816	6490
Collating units saved	4570	3225	3757	11552
Collating units added	4213	999	946	6158
Net saving	357	2226	2811	5394
Pages saved	360286	268596	304304	933186
Postage increase ($)	489	-19	327	797

Cost Savings	
Paper ($4.16/M)	$3882
Printing time (0.75 of above)	2912
Total saving	6794

Cost Increases	
Postage	$797
Covers ($16.00/M)	417
Collating ($5.50/hr)	113
Binding ($5.50/hr)	359
Packaging ($0.05/ea)	652
Distribution	6388
Total cost	8726

Net cost of lesson delivery policy $1,932

The major cost increase was found to be an added staffing requirement in the distribution section. These costs were derived by using an average cost of $0.74 per enrollment based on 1975-76 salaries of $21,220 distributed over 28,536 enrollments. It was assumed that one third of the time allocated to each enrollment would be in such activities as returning corrected lessons, handling over-the-counter sales, and general duties. The remaining $0.49 represents the cost of distributing a single package of lesson materials.

Cost changes were calculated and presented in Table 17. It is to be noted that high volume courses such as Health and Personal Development 10 and Accounting 10 escalate costs.

Discussion

Course development, printing and distribution contribute almost equally to the average cost of instructional materials delivered to students. The minimum cost (and the lowest possible fee capable of recovering costs) was found to be approximately $14.63 per course enrollment.

In examining the feasibility of altering the lesson distribution policy it was found that savings in material and labor in the printing section are offset by increased distribution costs. Though the net change is negligible, distinct advantages would accrue to the printing section where production pressure would be reduced.

Conclusions and Recommendations

Conclusions

Much of the data analyzed in support of this section of the study was found to be inaccurate--the records of the printing section didn't agree with records maintained in the accounting section. For that reason the records of the printing section presented an overly optimistic picture and had to be adjusted as noted in Table 12.

A significant amount of certified and non-certified staff time is devoted to proof-reading and correcting course manuscripts.

The average course cost was found to be $14.63 per enrollment expressed in 1975 dollars. Due to data inconsistencies this figure is believed to be understated, perhaps by as much as one-third.

Altering the distribution of lessons provides no major savings--savings in one area are offset by increased costs in another area. The major attractiveness of a decision to alter the method of distributing lessons would be in its potential for reducing the demands placed on the printing section.

Recommendations

It is recommend that:

1. Records maintained in the printing section (if they are to have any significant impact in controlling course costs) should be reconciled with records maintained in the accounting section. For the same reason, teachers' time devoted to

course development work (and recorded on the Instructors' Weekly Work Report) should be charged to specific courses.

2. Word- or text-processors should be considered as a means of reducing the certified and non-certified staff time devoted to proof-reading and revising textual material.
3. Feasibility of shipping lesson packs containing only the first five lessons of a course should be investigated.
4. Fees for courses should be increased to at least $4.00 per course credit.

PRINTING FACILITY

The printing facility at the ACS is one of the few remaining independent printing operations within the provincial government. The majority of the other printing facilities that used to operate independently have been consolidated into a centralized duplicating operation supported by the quick print shop. The examination of the cost of maintaining the ACS printing facilities comes at the same time that consideration is being given, by some levels of government, to the possibility of subsuming the ACS printing facility into the centralized system. In the face of these considerations, examination of ACS printing costs takes on added significance.

The ACS printing facility handles most of the printing needs of the school but is being taxed to capacity at peak periods. The printing facility currently consists of five printing presses and three large collators as well as a stitcher and drill necessary for binding. The printing facility is housed in rather cramped quarters at the ACS. Because of these cramped quarters it is sometimes necessary to move materials and supplies to make room to work. Moreover, the space limitations precludes the possibility of expanding the printing facility to any significant extent. While there is no means for easily assessing the cost of the cramped quarters, casual observation leads one to the conclusion that the costs may not be insignificant.

The ACS printing facility is presently being upgraded by the purchase of an AM-1250 press with increased capacity and a 416 Norfin Collator to replace an older 312 Norfin Collator. These units will increase the printing and collating capacity. Additionally, a new darkroom camera is being purchased to replace an antiquated model presently in use.

Two questions were posed at the outset of the examination of the ACS printing facility.

1. What are the costs of maintaining a printing facility?
2. How do these costs compare to contracted printing or other alternatives?

Sources of Data

The necessary data for this section were gathered from records maintained in the printing facility and from accounting records maintained by the ACS.

Findings

Cost of the ACS Printing Facility

The printing facility costs consist of labor, materials, and annual capital costs. Table 18 reflects the costs of operating the ACS printing facility for the 1975-76 fiscal year. It must be reported that the records of the printing facility revealed printing expenditures of $103, 436. The difference between that figure and the figure of $180,965 shown in the accounts is made up by repair costs, capital costs, administrative and accounting costs and a discrepancy in the salaries and materials expenditures.

Table 18

Annual Printing Expenditures at the ACS (1975-76)

	Expenditures[1]	Percent of Total Expenditure
Wages and Benefits	82,819	45.8
Materials	67,293	37.2
Repairs	2,811	1.6
Capital costs	21,829	12.1
Administration and accounting	6,213	3.4
Total	180,965	100.0

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[1] Total costs recorded in printing records amounted to $103,436 and excluded repairs, capital costs, administration and accounting as well as underestimating wages and benefits. All printing costs (based on printing records) at the ACS have been increased by 75% to accomodate this discrepancy.

Printing Alternatives

A selection of ACS courses was submitted to the Manager, Photocopying and Evaluation, Public Affairs Bureau, for cost estimates from Central Duplicating and commerical printers. The estimates are reported in Table 19 and compared to ACS costs. The adjusted ACS costs include items noted in Table 18.

Discussion

Without exception, the ACS printing costs compare favorably to the best alternative. All estimated printing costs for those items on the list submitted for estimates were lower at the ACS than by the other alternatives. Even the "information bulletin" which represented a very large job compared favourably.

A second very large printing job is that of envelopes. These may be submitted to commercial firms or Central Duplicating.

Though no costs were included for delays, delays and transportation costs would further escalate the costs of the alternatives shown in Table 19.

Conclusion and Recommendations

Conclusions

The most self-evident conclusion is that printing costs in the ACS printing facility are lower than other available alternatives. Physical space and workload would be the greatest determinant in choosing external printing capabilities.

Table 19

A Comparison of Printing Costs[1]

	Volume	Central Duplicating	Commercial Printing	ACS Printing Records	ACS Adjusted[2]
Information Bulletin	15,000	3972	5917	3400	5950 [3]
Geography of Alberta	300	840	1251	415	726
Art 30	300	1412	2103	285	499
Literature 21	300	779	1160	369	646

[1] See Appendix 10.

[2] Adjusted ACS printing costs are based on Printing Section Records and adjusted upward by 75 percent (see Table 18, Footnote 1).

[3] The variance between printing records and accounting records amounted to $77,529. This amount was prorated across all printing orders (see Note 2 above). It is unlikely that the proration should apply to high volume runs. Therefore the adjusted figure should perhaps be closer to the figure obtained from records maintained in the printing section.

Note: Costs of delay and transportation are not included in these comparisons. They would tend to make the ACS printing alternative even more attractive.

A second conclusion suggests that the ACS printing facility is operating at nearly full capacity.

Recommendations

It is recommended that:

1. The ACS printing facility should be maintained.
2. High volume printing requirements (such as envelopes) may be handled at Central Duplicating or by commerical firms. This avenue should only be pursued when guarantees of quality and delivery schedules can be provided and when subsequent re-runs are also feasible.
3. Space requirements for the printing facility should be examined to insure that cramped quarters do not increase printing costs.
4. Policy decisions impacting the ACS printing operation should be carefully assessed before implementation. As an example, a decision to use external printing services could lead to marked increases in liaison time and transportation and handling, and reductions in quality control--proof-reading, revisions, etc.

CERTIFIED STAFF UTILIZATION

The ACS operates a program of instruction that follows the regular school year--registration and commencement of studies in September with completion anticipated for May or June. A Summer Program is offered during July and August. As may be expected, fewer lessons are received for marking in September than in June. One problem facing the ACS Director is that of maintaining a staffing level such that maximum utilization of staff is achieved and serious overload or underload conditions are avoided.

The purpose of this section is to describe the lesson flow during the year, to identify the extent to which problems of staffing occur, and to discuss some alternatives. The following specific questions guided this investigation.

1. What is the volume of lesson flow during the year?
2. What is the effect of lesson volume on staffing arrangements?
3. How can staffing efficiency be improved?

Sources of Data

The data used in assessing staff utilization were derived from an analysis of Instructors' Weekly Work Reports.

Findings

Lesson Volumes

The 1975-76 school year was unique for a number of reasons. The postal strike (October and November 1975) disrupted the mail and prevented many students from getting their lessons to the ACS for marking.

Collective bargaining accounted for changes in the ACS teachers' contract. Increased costs and governmental spending restraints necessitated reduction of the 1976 Summer Session workload, particularly that part of the program that allowed Winter Session students to submit lessons during July and August. As a consequence many students attempted to finish their courses before the end of June with the result that the lesson volume increased markedly. Table 20 shows the monthly lesson volumes. A lesson volume ratio of 1:3.21 (September - June) is to be noted. The effects of the decision to reduce Summer services are further reflected in Table 21.

The derived figures (columns 4 and 6 of Table 21) are included to highlight the problem of estimating work loads based on average lesson marking time. Overall, the derived figures are approximately 6 percent high but in specific instances (November for example) the derived figures for lesson marking underestimate the actual by approximately 20 percent. Unfortunately derived figures must be used for planning purposes.

Figures 12 to 15 describe planning alternatives and are based on derived figures.

Staff Utilization

Table 21 presents a breakdown of teachers' activities on a monthly basis. It is to be noted that while lesson marking time correlates with lesson volume, course development and other duties bear a more inverse relationship. In other words, as the demand for lesson marking declines teachers shift to course development or other activities.

Table 20

Lesson Volumes for 1975-76 (Monthly)

Month	Elementary *1	Junior High	Senior High	Total	Weekly Marking Rate	Percent of Total
July	80	2148	12618 (10062)	14846	3712	6.83
August*	109	2144	15466 (12431)	17719	3544	8.15
September	104	1517	7141	8762	2191	4.03
October	205	2462	6221	8888	2222	4.09
November*	28	1850	6119	7997	1600	3.68
December	245	3709	9113	13067	3267	6.01
January*	318	4106	16955	21379	4276	9.83
February	271	3104	12326	15701	3925	7.22
March	263	4030	17726	22019	5505	10.12
April	260	3931	19876	24067	6017	11.07
May*	291	4495	30119	34895	6979	16.04
June	198	3243	24714	28155	7039	12.95
TOTAL	2372	36729	178394	217495		100.00

Each lesson contains 6 parts
*Month includes 5 weeks. All others include 4 weeks.
(1976 Summer Session figures are shown in parentheses. Changes are in part due to altered policies with respect to the level of service offered to students during the Summer of 1976.)

Table 21

The Distribution of Teachers' Activity Times in Hours for 1975-76 (Monthly)

Month	Course Development (Actual)	Other Duties (Actual)	Marking (Actual)	Marking (Derived)[1]	Total Hours (Actual)	Total Hours (Derived)[1]
July	1124.5	1984.2	7190.3	7138.0	10299.0	10246.7
August	1470.7	2216.9	8734.9	8567.0	12422.0	12254.1
September	2353.0	3459.3	4775.9	4252.0	10588.2	10064.3
October	1862.6	3438.0	4670.2	4341.0	9970.8	9641.6
November	3189.0	4952.6	4537.6	3772.0	12679.2	11913.6
December	1320.7	1535.1	5838.2	6315.0	8694.0	9170.8
January	1708.6	2760.7	9890.7	10406.0	14360.0	14875.3
February	1485.3	2914.7	7990.4	7675.0	12390.4	12075.0
March	1338.0	3185.9	9423.9	10667.0	13947.8	15190.9
April	1320.7	2288.4	10095.8	11670.0	13704.9	15279.1
May	1651.6	2529.0	14341.2	16920.0	18521.8	21100.6
June	1256.6	2659.0	11737.3	13653.0	15652.9	17568.6
TOTAL	20081.3	33923.3	99226.4	105376.0	153231.0	159380.6

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[1] Calculated on the basis of lesson volume and average lesson marking time. Elementary 1.53, Junior High 0.405, and Senior High 0.487 hours per lesson.

Figure 12

1975-76 Workload of the Alberta Correspondence School (Monthly)

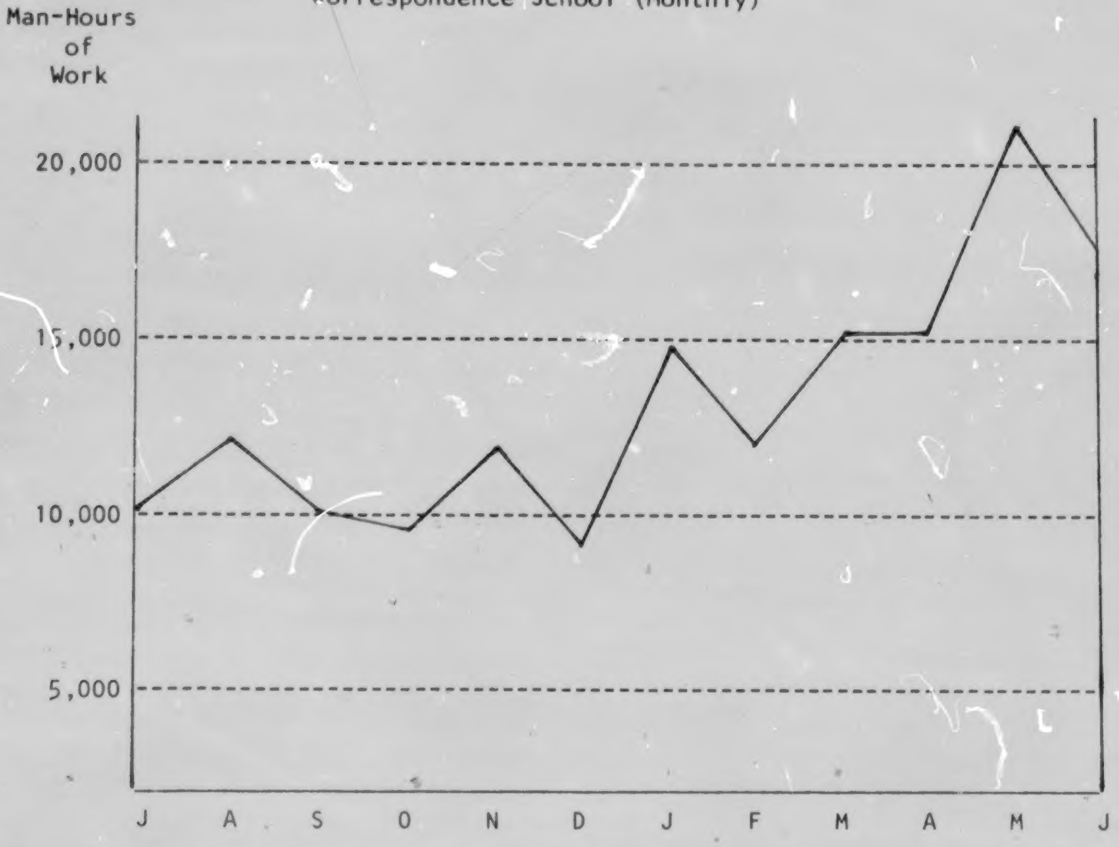
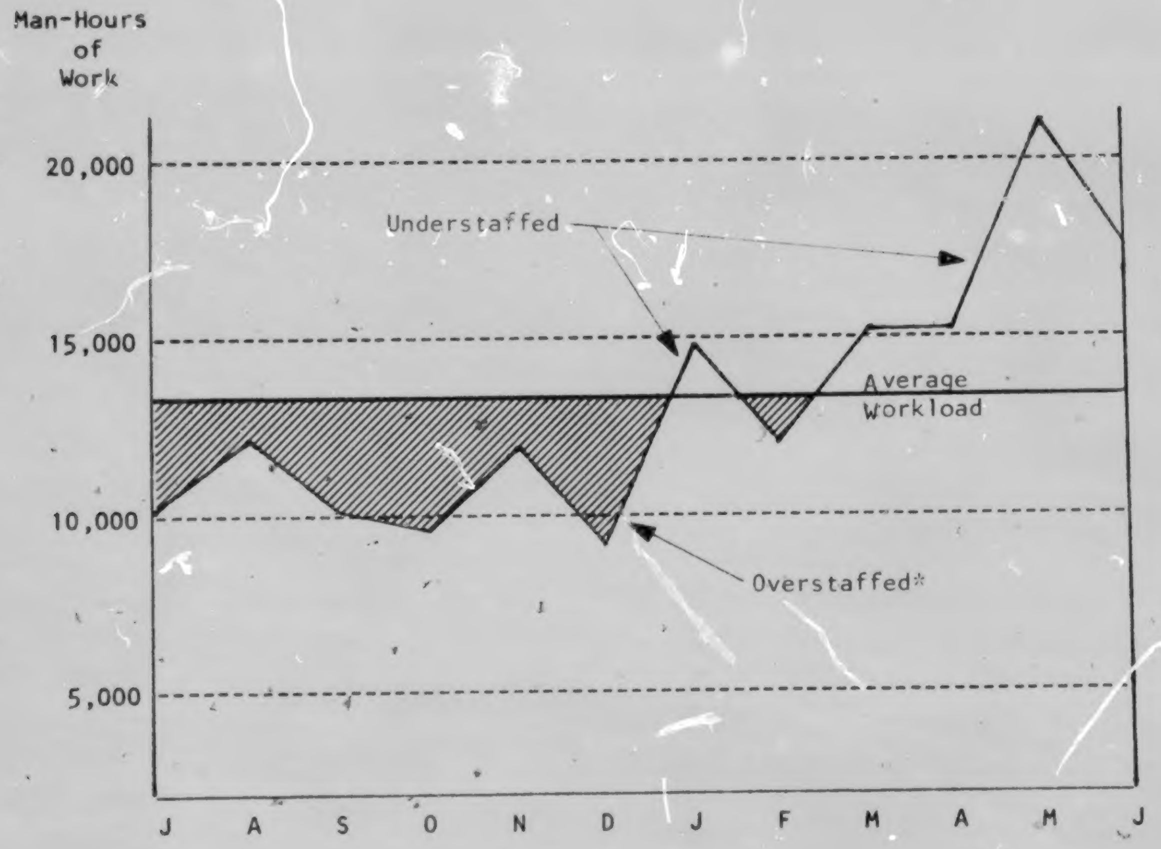


Figure 13

Effect of Staffing Based on The Average Workload



* Utilize this period for vacations

Figure 14

Effect of Staffing to Meet The Minimum Workload

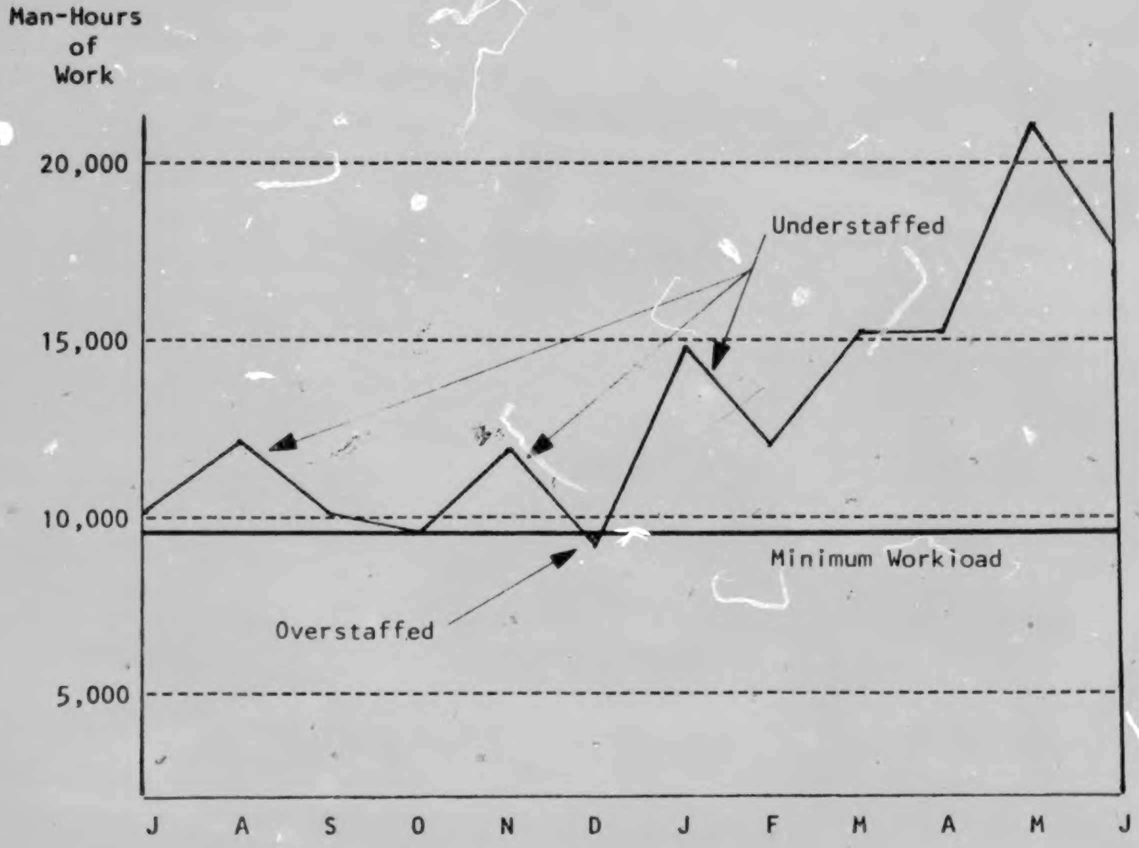
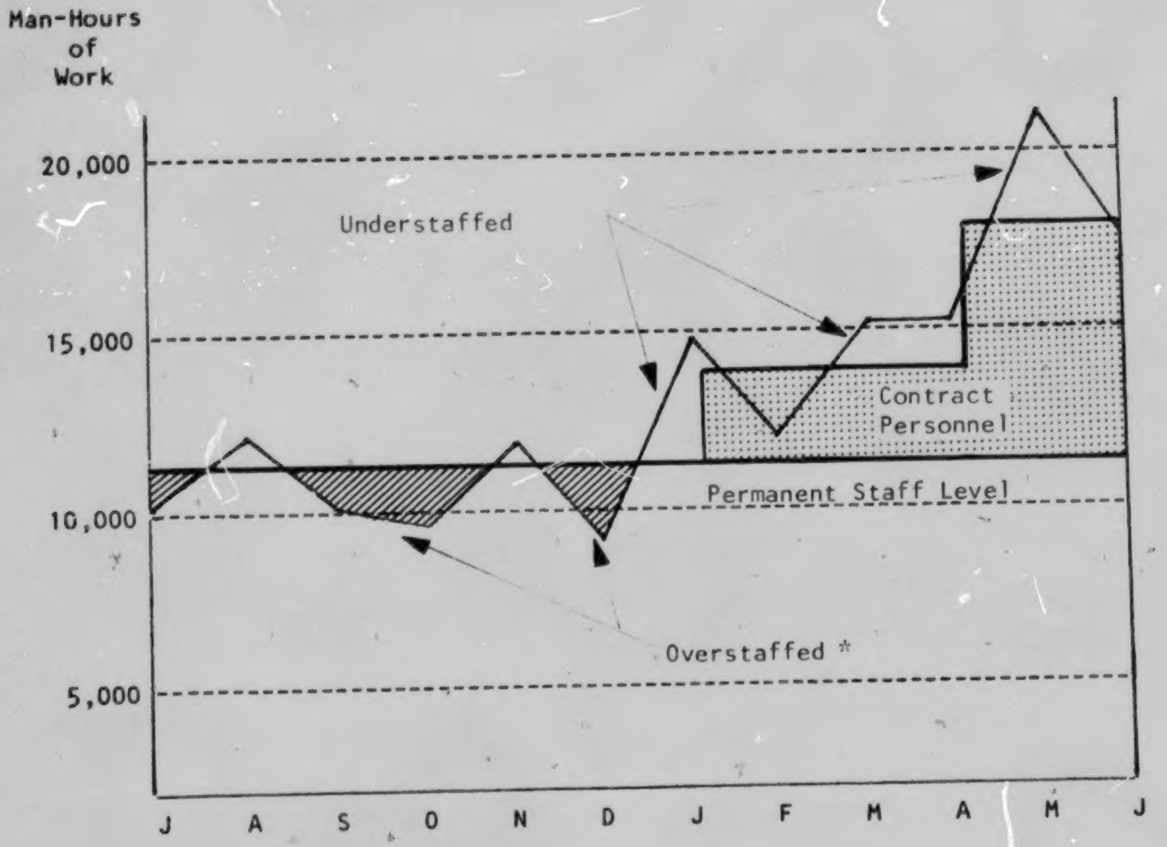


Figure 15

Effect of Augmenting ACS Permanent Staff With Short-term Contract Personnel



*Utilize this period for vacation.

By being able to deploy teachers to other activities than marking the ACS Director has been able (for the 1975-76 year) to reduce the total manpower demand ratio to 1:2.1 (September to May).

Staffing Efficiency

Figure 12 reduces the problem to its barest essentials. Where should the permanent staff level be set? How are fluctuations around the established level to be managed?

Figure 13 indicates what happens when permanent staff levels are set at the planned average workload. Figure 14 shows the case for setting the permanent staff level at the planned lowest level of work-load. Figure 15 presents an optimization curve with staffing levels tracking planned workloads.

Figures 13 - 15 are alternatives for maintaing staff efficiency sufficient staff to handle the workload without the occurence of major overloads or underloads.

Discussion

Fluctuations occur in lesson volumes over the ACS school year. Administrative strategies to smooth the workload over the year reduced the peak values to some extent but significant peaks still remained.

By setting the permanent staff level at the average workload level (Figure 13), serious inefficiencies can occur early in the school year. Setting the levels as shown in Figure 14 (at the lowest level of demand) solves the problem of inefficiencies early in the school year but creates another--maintaining temporary help to handle peak loads. Figure 15 represents a compromise--staffing at a level that is adequate to handle the workload early in the year and augmenting the staff with part time help, short-term contracts, or contracted lesson marking.

In each case (Figures 13-15) the permanent staff should be utilized for marking and all course development. The augmenting staff should be confined to lesson marking and/or course development in special subjects.

Alternatives

An alternative, open when the majority of the staff are on a flexible holiday schedule, is the use of holidays to avoid major underload situations. Vacations could be scheduled to occur during planned slack periods.

A second alternative is contracted lesson marking. This procedure could be used when peaks in lesson volume occur. Appropriate fees for such contracted marking are discussed in the section devoted to instuctional costs (Table 8).

Conclusions and Recommendations

Conclusions

The workload at the ACS is not uniform over the months of the school year. Marked variations occur in lesson volume. These variations in lesson volume make it difficult for the Director to plan for utilizing each teacher at a maximum level during the year. The problem of staffing a year-around operation is not made easier by the terms of the collective agreement wherein the majority of teachers are on a 10-month year with holidays during July and August.

Recommendations

1. Part-time staff paid on a piece-rate basis should be considered as an alternative to increasing the staff size in order to accomodate peak work loads.
2. Holidays should be scheduled for planned slack periods.
3. The policy of staffing a year-around operation with 10-month employees should be reexamined.

STUDENT MOTIVATION AND FEEDBACK

The lesson-marking component of the instructional program was analyzed in order to answer the following questions:

1. What motivates correspondence students? What is a reasonable standard or expectation for lesson turnaround times?

2. What is the typical turnaround time for students' lessons submitted to the ACS for marking?

3. What is the flowpath of lessons from students, through the ACS and back to students? Are there delays or bottlenecks in the flow path?

Sources of Data

In addition to a literature review, two sources of data were analyzed in order to answer the foregoing questions. First, a sample of 43 high school students was drawn from the ACS student files and their records were analyzed to estimate lesson turnaround times. The sample contained turnaround times for 336 lessons. Secondly, the lesson flowpath through the ACS was observed and charted.

Findings

Motivating Correspondence Students

One of the relationships to emerge from a review of literature on correspondence education was that of successful course completion to speedy completion of first lessons (Pfeiffer, 1970). A second relationship links course completion with rapid turnaround of lessons by correspondence teachers (Harter 1969; Weissbrot, 1969:174; Wedemeyer, 1971:127; Ghatala, 1972:67; Leskinen, 1975). Weissbrot (1969) and Leskinen (1975) contend that turnaround times for lessons in the correspondence school should be one day (24 hours) and in no cases longer than 3 days.

The correspondence teacher can do little to motivate the newly enrolled student to speedily submit the first lesson beyond carefully preparing the lesson (designing the lesson attractively and building sound learning theory into the lesson) and contacting the student shortly after materials are mailed out. However the lesson turnaround time would seem to be a variable administrators and correspondence teachers can deal with.

Lesson Turnaround Time

The lesson turnaround time was measured at the ACS to determine the extent to which it conforms to the 24 hour expectation held by Weissbrot and Leskinen. To do this a data sample (described earlier) was drawn and analyzed. To calculate the turnaround time for the sample drawn, the date of receipt, the day of mailing, and all working days between the two were included.

Table 22 shows the average lesson turnaround times experienced by a random sample of 43 high school students. The average turnaround time was found to be 5.263 days. With a standard deviation of 1.72 days, fewer than 16 percent of the students have their lessons returned to them with less than 3.54 days of delay.

Figure 16 is a cumulative percentage ogive describing lesson turnaround times.

Lesson Flowpath

Figure 17 is an analysis of the functions comprising the flowpath

Table 22

An Analysis of a Random Sample of Lesson Turnaround Times

Case	No. of Lessons	Total Delay: All Lessons	Average Delay: Each Lesson
1	4	38 days	9.5
2	4	18	4.5
3	1	5	5.0
4	10	89	8.9
5	5	28	5.6
6	2	8	4.0
7	14	49	3.5
8	12	55	4.6
9	1	4	4.0
10	3	17	5.7
11	20	78	3.9
12	12	62	5.2
13	19	122	6.4
14	5	34	6.8
15	11	45	4.1
16	20	116	5.8
17	1	4	4.0
18	20	107	5.4
19	20	84	4.2
20	12	67	5.6
21	3	12	4.0
22	4	15	3.8
23	8	36	4.5
24	1	7	7.0
25	1	7	7.0
26	10	40	4.0
27	13	59	4.5
28	1	8	8.0
29	4	14	3.5
30	1	6	6.0
31	4	12	3.0
32	2	10	5.0
33	5	25	5.0
34	1	4	4.0
35	13	53	4.1
36	1	4	4.0
37	1	6	6.0
38	5	17	3.4
39	5	25	5.0
40	19	90	4.7
41	12	126	10.5
42	6	49	8.2
43	20	89	4.4
			$\Sigma X = 226.3$
			$\bar{X} = 5.263$
			S.D. = 1.715

Figure 16

Cumulative Percentage of Lesson Turnaround Times

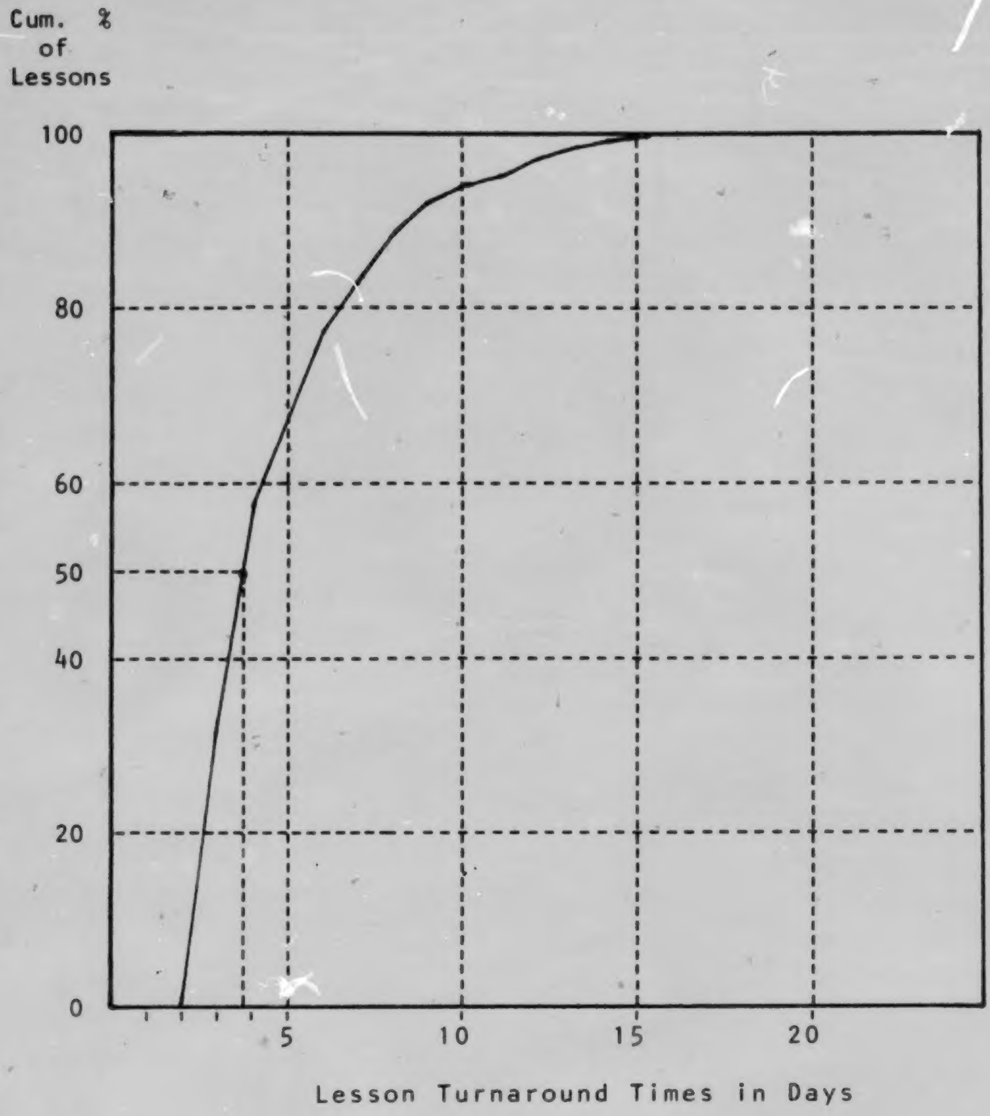


Figure 17 (a)

Function Analysis of The Records And Lesson Handling Section

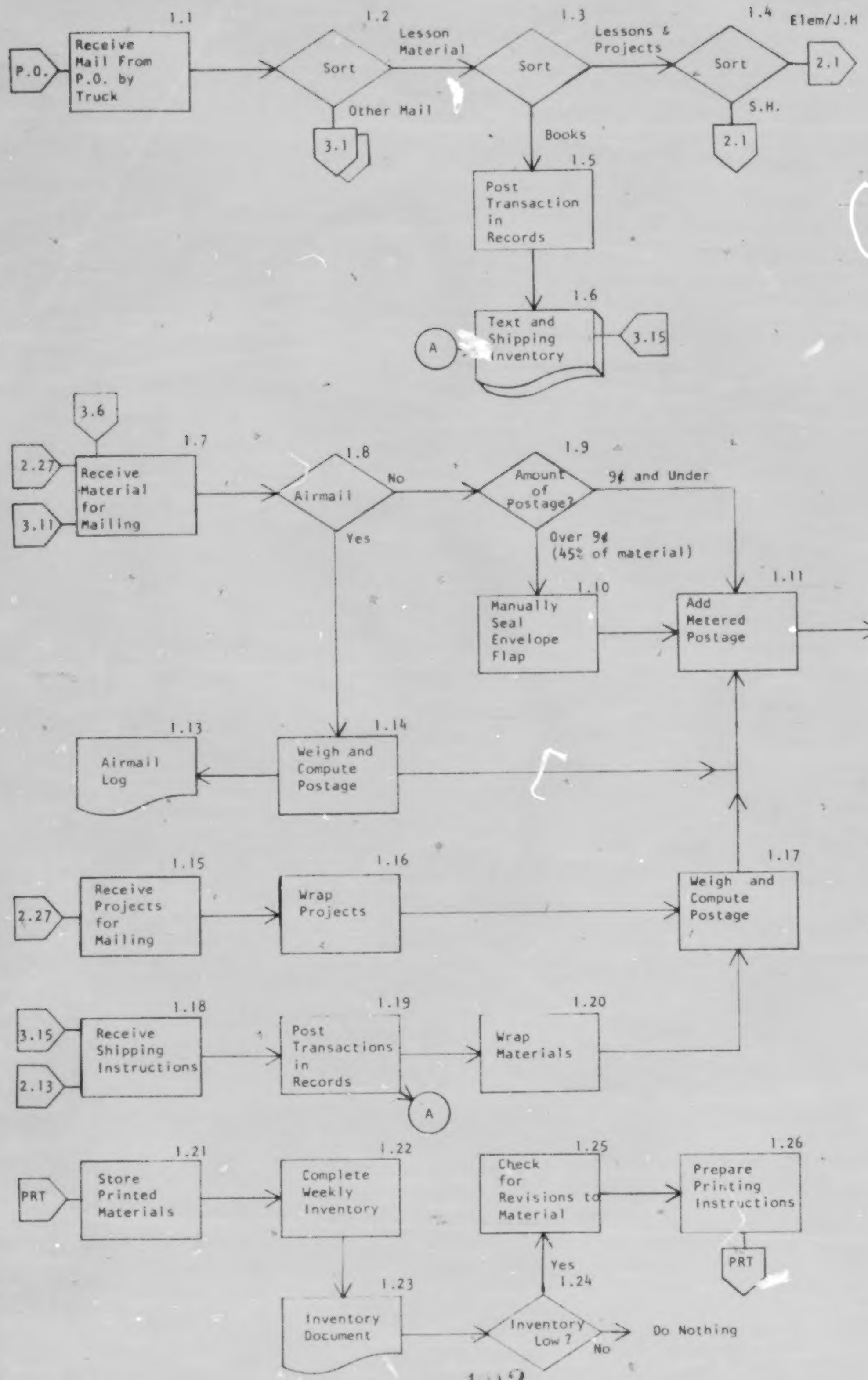


Figure 17 (b)

Function Analysis of The Records And Lesson Handling Section

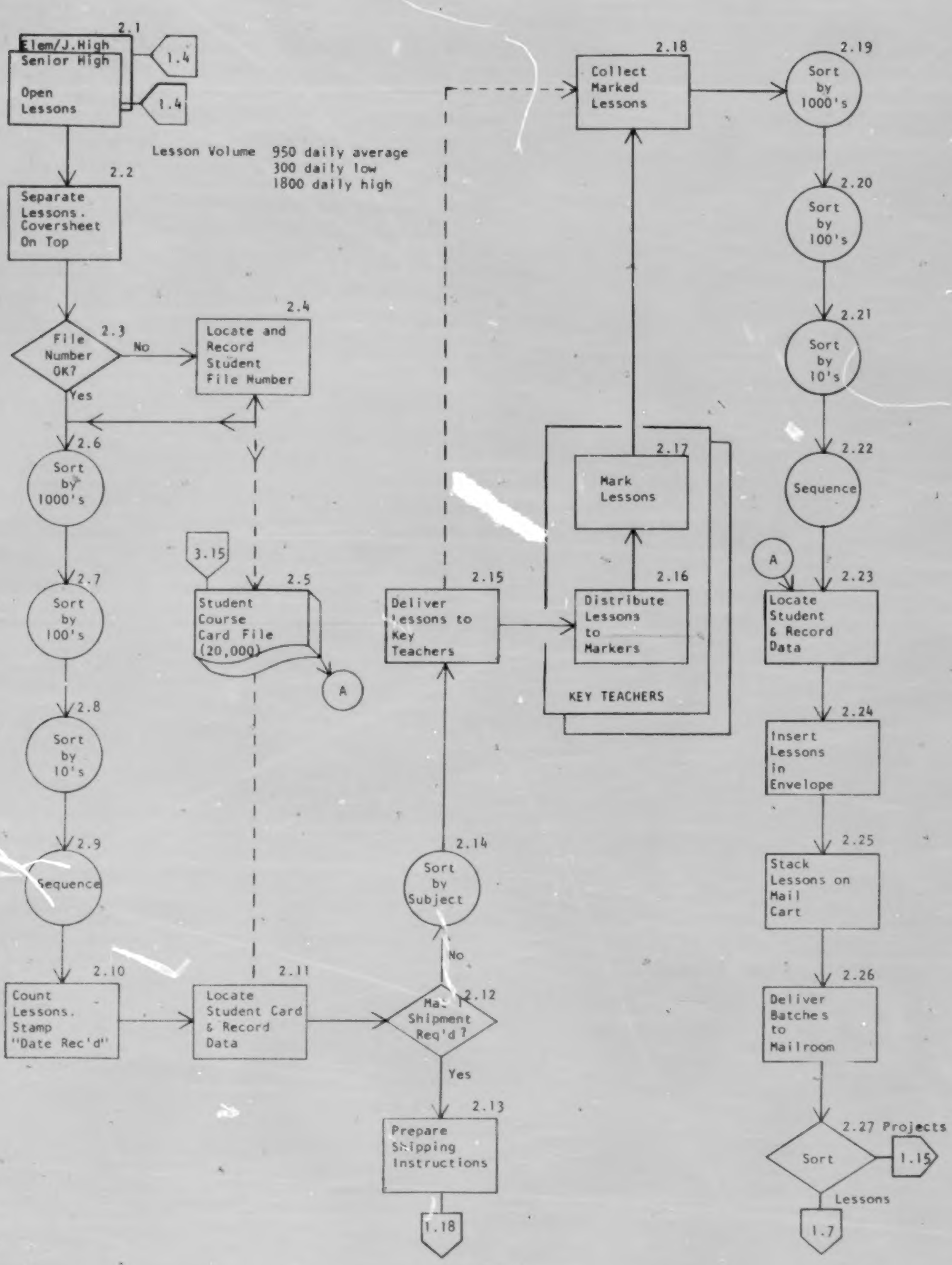
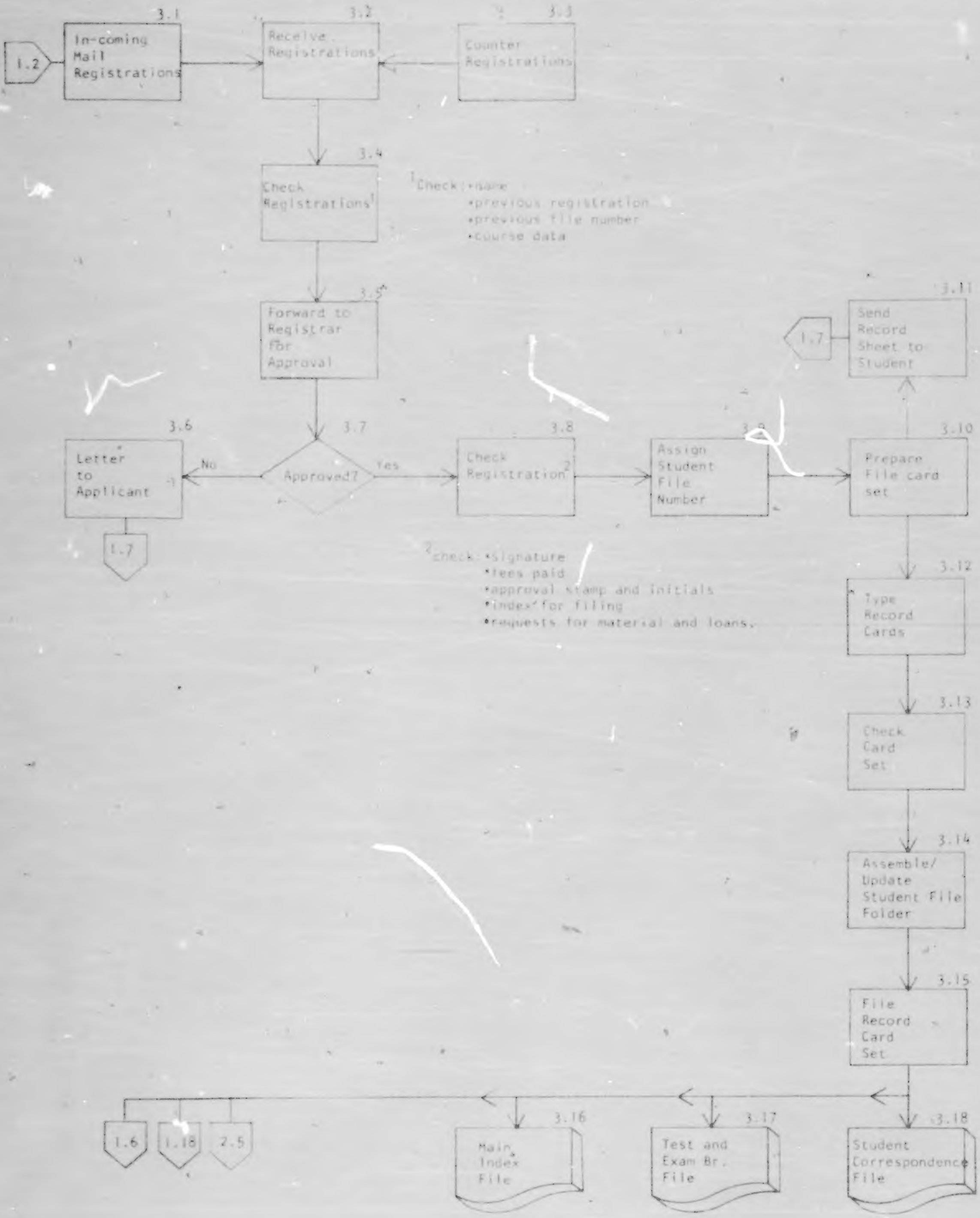


Figure 17 (c)

Function Analysis of The Records And Lesson Handling Section



[1] Check: •name
•previous registration
•previous file number
•course data

[2] check: •signature
•fees paid
•approval stamp and initials
•index for filing
•requests for material and loans.

of lessons from the mailroom to teachers for marking, and back to the mailroom.

Three different activities account for most of the portal-to-portal elapsed time. First, lesson sorting. Lessons must be sorted into numerical sequence by file numbers for posting of data both before (Steps 2.6 to 2.9) and after marking (Steps 2.19 to 2.22). Additionally, lessons must be sorted by subject (Step 2.14) for distribution to teachers. Second, record posting. Record posting takes place on two occasions: when the lesson is received (Step 2.11) and when it is returned (Step 2.23). Thirdly, marking lessons (Steps 2.16 and 2.17).

Observation of the lesson sorting/posting process indicates that most lessons are tied up in the clerical steps shown in Figure 17 for about one day.

Another activity was observed which appeared to be counterproductive. All of the lessons being returned to students must be weighed and the required postage noted on the envelope (Step 1.9). The correct postage is then added by a metering machine (Step 1.11) and the envelope sealed. Because the metering machine will not consistently seal envelopes requiring over 9 cents postage (45 percent of the mail volume), all envelopes in this category must be sealed manually. This amounts to manually sealing approximately 450 envelopes (9" x 12") daily.

Discussion

A large amount of human resources are invested over a period of time in the handling and marking of student lessons. Not only may the process be relatively inefficient, it tends to lengthen the feedback time for students--a factor believed to be closely related to motivation.

The present system (as described in the charted flowpath) is structured around two-batch processing (one batch in and one batch out per day). In order to interface the flow with the records, a 1000-cell sort of lessons is necessary (sort student I.D. numbers by 1000's, 100's and 10's). Not only is this process (which occurs twice daily) slow, it requires a large work area. Equally difficult is the sorting of lessons by subject area.

Alternatives

Currently, lessons are being handled in large batches--one batch of incoming lessons per day and one outgoing batch. On the other hand the functions outlined in the flow charts are ideally suited to continuous flow or small batch processing.

Several alternatives are open which might reduce lesson turnaround time. Baath (1972) and Ghatala (1972) describe systems of multiple choice evaluations, optically-scored test results, and pre-written computer-managed responses to errors. To students these responses, in comparison to handwritten comments, were favorable.

McPartlin (1953) and Sorensen (1969) have described electronic data processing techniques that serve to eliminate many of the time consuming steps shown in Figure 17. McPartlin's (1953) work was deemed feasible though based on fewer than 2000 students.

Conclusions and Recommendations

Conclusions

Standards for turnaround times for lessons in correspondence schools were established from a review of relevant literature. The ACS was compared to the one day (24 hour) literature-derived standard. This comparison showed that the ACS fails to get lessons back to students in the desired time.

Analysis and observation suggests that much of the elapsed time (about 20 to 40 percent) is involved in sorting lessons and maintaining records. Sixty to eighty percent of the elapsed time was consumed in lesson marking.

In some schools automated data processing has been used to reduce time consuming clerical tools. In a number of correspondence schools computer-generated pre-written comments are used to respond to lessons submitted by students.

Recommendations

It is recommended that:

1. The time consuming activities of lesson sorting, record sorting, and envelope stamping and sealing be examined and alternatives considered.
2. Data processing (either mechanical or electronic) should be considered for purposes of record-keeping.

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AN ANALYSIS OF THE QUALITY OF THE INSTRUCTIONAL PROGRAM

The overall completion rate for enrollments at the ACS was found to be 25 percent. This, when contrasted with the estimated 90 percent completion rate for regular students used in the cost-benefit analysis, appears very low. A somewhat fairer question might ask how the ACS results compare with completion rates of other correspondence institutions. A review of related literature yielded the following findings with respect to completion rates.

Ball (1966) reported that in her study 39.7 percent of the enrollees in first and second year college courses completed successfully. She also reported that completion rates were higher for students who had taken previous courses.

Weissbrot (1969:174) reported an Israeli experiment in which 85 percent of the 800 14-year old students successfully completed.

Mathieson (1971) recommends use of the NUEA (National University Extension Association) formula for computing completion rates. That formula excludes all enrollees who submit no lessons. Using the NUEA formula he suggests that college level completion rates average 55.5 percent.

Macken (1975) summarized a number of studies: Mallory (1933) reported a 61 percent completion rate; Kennen (1940) reported a 20 percent completion rate at ICS; McCauley (1962) found 53.4 percent of construction apprentices completed studies; Tenpest (1965) found 70.6 percent of those returning assignments at the University of Utah completed; and, Hall (1966) found a 40 percent completion rate at the University of Washington.

Clearly, on the basis of reported research, one cannot find a single standard for completion. This is especially true at the elementary and secondary levels where so little research has been conducted. The range of completion rates reported is even further clouded because some results are based on total enrollments while others are based on NUEA calculations which exclude non-starters.

Interestingly, when comparing correspondence students with regular students, the findings often favor the correspondence student.

Childs (1966) noted that the length of time to complete a correspondence course had no practical effect on grades. Neither did mental ability have any clear relationship with one's ability to complete a correspondence course.

Mathieson (1971) reported that he found students with some experience with correspondence study achieved better grades in subsequent residence study than did regular residence students.

Macken (1975) reported several studies in which it was found that correspondence students did better in subsequent studies than regular students.

Enrollment attrition rates were reported by McKenzie (1968) as ranging from 30 to 90 percent. The highest attrition rates were in private home study courses and business and industry. The lowest rates were at the university level. Evidence offered by Dinkmeyer and Dreikurs (1963:49) suggests that "A student may be overwhelmed by exposure to the whole task to be done. It is often better to start with a partial task." It may be that part of the attrition results from students' inability to see themselves successfully completing all of the required work.

Based on the evidence presented, a number of questions emerge that focus on the quality of the ACS instructional program.

1. How do students perform in programs offered by the ACS?
2. Can curriculum evaluation criteria be established to aid in identifying stumbling blocks encountered by students?
3. Are the student workloads demanded by equal credit courses approximately equivalent?
4. How do correspondence study workloads compare to workloads of students receiving regular instruction?
5. Are there specific lessons in a course which have a critical relationship to course completion?

Sources of Data

One source of data consisted of approximately 20,000 student record cards. Data from these cards were manually transferred to coding sheets, key punched, and analyzed on a computer to determine course completion patterns. A second source of data were students' reports of time required to complete lessons. This data was collected by instructors on the form shown in Appendix 4. Two samples were gathered during two separate 4-week periods, the first period ended March 19,1976 and the second period ended on May 21, 1976

Findings

Completion Rates

The overall completion rates (based on total enrollments) for ACS programs are presented in Tables 23 and 24. The completion rates for specific Grade 10,11 and 12 courses (based on actual starters) are

Table 23

A Distribution of Completion Rates[1] Based on Student Types

Level and		Grade 10		Grade 11		Grade 12 E[2]		Grade 12 NE[3]		Adult		Elementry		Jr. High		Total	
Subject Area		Enrol.	Comp. Ratio	Enrol.	Comp. Ratio	Enrol.	Comp. Ratio	Enrol.	Comp Ratio	Enrol.	Comp. Ratio	Enrol.	Comp. Ratio	Enrol.	Comp. Ratio	Enrol.	Comp. Ratio
Grade 10																	
1100	Humanities	649	.193	289	.228	13	.308	436	.245							1387	.218
1200	Sciences	1029	.228	706	.255	69	.261	1126	.233							2930	.237
1300	Languages	319	.273	226	.235	24	.125	386	.104							955	.192
1400	Personal Dev.	232	.263	483	.367	59	.322	1357	.375	1	.000					2132	.359
1500+	Technical	791	.316	1017	.355	103	.437	2200	.351					1	.000	4112	.347
	Sub-Total	3020	.251	2721	.308	268	.332	5505	.307	1	.000			1	.000	11516	.293
Grade 11																	
2100	Humanities	5	.200	863	.192	134	.172	1321	.224					1	.000	2324	.209
2200	Sciences	1	.000	752	.233	103	.243	777	.209							1633	.222
2300	Languages			131	.351	19	.474	77	.208							227	.313
2400	Personal Dev.	1	.000	161	.304	32	.375	372	.277							566	.290
2500+	Technical			379	.219	38	.316	696	.218							1113	.222
	Sub-Total	7	.143	2286	.227	326	.248	3243	.225					1	.000	5863	.227
Grade 12																	
3100	Humanities			1	.000	1462	.171	727	.213							2190	.185
3200	Sciences					1524	.198	275	.229							1799	.203
3300	Languages					261	.310	3	.333							264	.310
3400	Personal Dev.					13	.231	108	.324							121	.314
3500+	Technical			1	.000	45	.267	681	.291					1	.000	728	.289
	Sub-Total			2	.000	3305	.196	1794	.252					1	.000	5102	.216
4000	Adult	67	.030	24	.417	188	.229	2135	.128					1	.000	2415	.136
5000	Retro-Credit	1	.000			866	.065	5	.000			1	1.000	1	.000	874	.064
	Grade 1											17	.529			17	.529
	Grade 2					1	.000					28	.607			29	.586
	Grade 3											21	.286			21	.286
	Grade 4							1	.000	1	.000	29	.379			31	.355
	Grade 5											19	.211			19	.211
	Grade 6									8	.000	35	.371			43	.302
	Grade 7			1	.000					33	.242			924	.502	958	.493
	Grade 8					1	.000			57	.211			647	.383	705	.369
	Grade 9									69	.217			865	.244	934	.242
	Sub-Total	68	.029	25	.400	1056	.094	2141	.128	168	.208	150	.407	2438	.379	6046	.232
	TOTAL	3095	.246	5034	.272	4955	.185	12683	.248	169	.207	150	.407	2441	.379	28527	.253

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[1] Based on students completing courses (passed or "completed our purposes") and calculated on the basis of total enrollments

[2] Grade 12 Examination students

[3] Grade 12 Non-examination students

Table 24

A Distribution of Completion Rates[1] Based on Student Location

Level and	Subject Area	Adults		Other		Edmonton		Calgary		Zone 1		Zone 2		Zone 3		Zone 4		Zone 5		Zone 6		Total	
		Enrol	Comp. Ratio	Enrol	Comp. Ratio	Enrol	Comp. Ratio	Enrol	Comp. Ratio	Enrol	Comp. Ratio	Enrol	Comp. Ratio	Enrol	Comp. Ratio	Enrol	Comp. Ratio	Enro	Comp. Ratio	Enrol	Comp. Ratio	Enrol	Ratio
Grade 10																							
1100	Humanities	864	.216	16	.125	94	.255	37	.108	64	.266	70	.229	67	.269	68	.162	52	.192	52	.250	1384	.218
1200	Sciences	1412	.183	53	.226	205	.215	81	.210	156	.263	263	.300	270	.344	212	.321	129	.310	140	.279	2921	.237
1300	Languages	362	.119	15	.200	82	.293	40	.250	61	.197	117	.180	103	.330	61	.164	61	.197	43	.302	945	.193
1400	Personal Dev.	424	.288	24	.292	225	.338	195	.282	139	.331	295	.242	254	.480	284	.377	129	.442	158	.304	2127	.335
1500+	Technical	1648	.287	40	.200	198	.263	119	.311	338	.337	500	.408	384	.466	368	.432	272	.416	242	.364	4109	.347
	Sub-total	4710	.230	148	.216	804	.274	472	.261	758	.303	1245	.314	1078	.414	993	.358	643	.361	635	.317	11486	.289
Grade 11																							
2100	Humanities	1215	.147	53	.132	174	.230	83	.253	92	.402	169	.308	154	.351	118	.331	131	237	128	.211	2317	.210
2200	Sciences	576	.177	34	.265	173	.162	54	.130	101	.208	188	.245	145	.297	155	.290	104	.269	96	.323	1626	.221
2300	Languages	52	.250	7	.000	29	.310	12	.333	21	.429	44	.318	24	.417	17	.412	9	.222	11	.273	226	.314
2400	Personal Dev.	276	.217	9	.000	21	.048	21	.333	44	.455	55	.436	39	.385	39	.462	29	.310	32	.344	565	.292
2500+	Technical	602	.193	14	.286	39	.179	20	.100	62	.242	99	.232	75	.240	82	.342	53	.340	59	.237	1105	.222
	Sub-total	2721	.173	117	.171	436	.195	190	.216	320	.319	555	.287	437	.321	411	.334	326	.270	326	.264	5839	.227
Grade 12																							
3100	Humanities	1604	.170	17	.235	108	.167	61	.066	51	.196	80	.150	57	.368	74	.284	70	.300	57	.316	2179	.184
3200	Sciences	1051	.134	30	.067	100	.180	39	.205	72	.361	145	.290	97	.320	107	.327	85	.412	64	.359	1790	.202
3300	Languages	109	.165	7	.286	35	.486	10	.200	24	.417	32	.375	18	.667	12	.167	5	.200	11	.455	262	.308
3400	Personal Dev.	58	.207	2	.500	6	.167	2	.500	4	.500	11	.364	1	1.000	16	.375	5	.600	16	.438	121	.314
3500+	Technical	391	.281	4	.250	35	.086	21	.333	38	.158	51	.314	48	.438	45	.356	66	.303	29	.345	728	.291
	Sub-total	3213	.172	60	.167	284	.201	133	.166	189	.286	319	.270	221	.389	254	.315	231	.346	177	.356	5081	.215
4000	Adult	2388	.135			9	.000	1	.000	2	.000	6	.333	5	.400	2	.000	3	.000	1	1.000	2417	.135
5000	Retro-Credit	865	.065	2	.000							1	.000	2	.000							870	.065
	Grade 1	17	.529																			17	.529
	Grade 2	28	.607			1	.000															29	.586
	Grade 3	13	.462													8	.000					21	.286
	Grade 4	18	.556			1	1.000									8	.000	4	.250			31	.387
	Grade 5	15	.267													5	.000					20	.200
	Grade 6	34	.382													8	.000					42	.309
	Grade 7	334	.323			10	.100	5	.400	14	.143	34	.177	41	.439	207	.730	150	.560	146	.685	941	.502
	Grade 8	339	.257	1	.000	7	.000	4	.000	15	.000	32	.219	32	.375	74	.581	69	.348	132	.659	705	.369
	Grade 9	645	.206	1	.000	10	.100	4	.000	42	.071	33	.303	73	.630	39	.205	56	.161	31	.516	934	.242
	Sub-total	4696	.163	4	.000	38	.079	14	.143	73	.068	106	.236	153	.510	351	.576	282	.418	310	.658	6027	.233
	TOTAL	15340	.187	329	.188	1562	.234	809	.232	1340	.292	2225	.297	1889	.397	2009	.385	1482	.349	1448	.383	28433	.251

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[1] Based on students completing courses (passed or "completed our purposes") and calculated on the basis of total enrollments.

presented in Tables 25 to 27. Calculated by the NUEA formula, the ACS completion rates are approximately 36 percent.

Lesson Quality Indicators

The data from the sample of lesson completion times were analyzed in such a way as to yield two indices: a lesson difficulty index and a lesson quality index.

Data pertaining to the time students required to complete lessons from the two sampling periods were combined prior to analysis. The analysis was simple and followed a procedure outlined by Hathaway (1971: 15-18; 1974:115-130). For each column of figures on the form (representing the sample for each lesson in a course) the mean time ($\overline{X}$) and standard deviation (S.D.) was calculated. The mean time for a lesson was used as a proxy measure of lesson difficulty. The longer the time to complete the lesson the more difficult it was believed to be.

The standard deviation was used to calculate lesson quality. The greater the standard deviation the more likely that the lesson was confusing (contained a high level of uncertainty) to the students. In other words some students may have completed the lesson very quickly while other students may have encountered problems or become confused thereby contributing to a higher standard deviation. To get an index of quality the mean time to complete the lesson was divided into the standard deviation. The result (the coefficient of variation "V" (Garrett, 1966:57)) was considered to be the amount of uncertainty attributable to a unit of time. Using this lesson quality index "V" it appeared possible to rank order lessons in courses in terms of their quality.

In order to test the potential of the lesson difficulty ("$\overline{X}$") and

Table 25

Grade 10 Enrollments, Starters and Course Completion Ratios

Course	Enrolled	Started	Completion Ratios[1] 5 Cred.	4 Cred.	3 Cred.	2 Cred.
1100 Eng 10	308	197	0.18			
1115 Eng 13	533	414	0.25			
1150 SocS 10	542	316	0.31			
Sub-total	1383	927	0.25			
1200 Math 10	528	370	0.26			
1216 Math 13	381	238	0.19			
1225 Math 15	990	765	0.29			
1230 Biol 10	250	103			0.19	
1240 Chem 10	218	102			0.43	
1260 Phys 10	265	164			0.56	
1280 Scien 11	276	160	0.35		0.39	
Sub-total	2908	1902	0.27		0.39	
1300 French 10	216	145	0.17			
1315 Ger 10	334	244	0.30			
1325 Latin 10	76	51	0.18			
1344 Span 14	161	91	0.19			
1355 Uk. 10	161	119	0.22			
Sub-total	948	650	0.23			
1400 Art 10	408	303	0.28	0.43	0.55	
1415 Health 10	1505	1111	0.36	0.42	0.52	0.63
1426 Music 12	39	31	0.11	0.00	0.55	
1435 Occup 10	111	68			0.51	0.68
Sub-total	2063	1513	0.25	0.28	0.53	0.66
1715 Dftg 10	220	157	0.33		0.68	
1501 Acct'g 10	1232	1010			0.47	
1565 Typing 10	468	311			0.39	
1537 BusF.	259	201	0.38		0.69	
1916 Hort 10	68	55	0.40			
1730	186	146	0.20	0.29		
1800 Ag. 10	31	20	0.35	0.50		
1621 ModLv. 10	140	102	0.50	0.60		
1726 GenTech 10	15	9	0.43	0.00		
1836 Bld'g C 12	98	77	0.55			
1550 RecK 10	642	549	0.43		0.60	
1880	44	29	0.24			
1824	285	157	0.22			
1601 Cl & T	14	12	0.50			
1611 Food 10	78	53	0.50			
Sub-total	3780	2888	0.39	0.35	0.57	
TOTAL	11082	7880	0.31	0.32	0.50	0.66

Droupout 28.9%

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[1] Based on starters

Table 26

Grade 11 Enrollments, Starters and Course Completion Ratios

Course	Enrolled	Started	Completion Ratios[1] 5 Cred.	4 Cred.	3 Cred.	2 Cred.
2100 Eng 20	283	169	0.17			
2115 Eng 23	509	320	0.15			
2141 Comm. 21	17	5			0.20	
2143 Lit 21A	63	46			0.22	
2144 Lit 21B	6	6			0.50	
2150 SocS. 20	306	151	0.26			
2165 Geo. 20	186	114	0.29		0.64	
2170 Psych 20	651	512	0.28	0.46	0.46	
2175 Soc 20	281	149	0.34	0.44		
Sub-total	2302	1472	0.25	0.45	0.40	
2200 Math 20	385	216	0.32			
2216 Math 23	349	231	0.18			
2225 Math 25	353	282	0.31			
2230 Biol 20	181	88			0.22	
2240 Chem 20	146	84			0.55	
2260 Phys 20	188	117			0.53	
2275 Phys 22	17	13			0.00	
Sub-total	1619	1031	0.27		0.33	
2300 Fr 20	127	83	0.36			
2315 Ger 20	78	60	0.42			
2325 Latin 20	4	1	0.00			
2355 Uk 20	15	12	0.33			
Sub-total	224	156	0.28			
2400 Art 20	137	101	0.30	0.50	0.53	
2430 Law 20	428	268	0.32		0.60	
Sub-total	565	369	0.31	0.50	0.57	
2565 Typ 20	249	165	0.36			
2501 Acct'g 20	527	341			0.30	
2555 ShHand 20	238	158	0.11			
2540 Merch 20	30	20	0.35			
2525 Bus Prac 20	58	39	0.26			
Sub-total	1102	723	0.27		0.30	
TOTAL	5812	3751	0.27	0.47	0.40	

Drop out Rate 35.5%

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[1] Based on starters

Table 27

Grade 12 Enrollments, Starters and Course Completion Ratios

			Completion Ratios[1]			
Course	Enrolled	Started	5 Cred.	4 Cred.	3 Cred.	2 Cred.
3100 Eng 30	751	380	0.20			
3115 Eng 33	565	378	0.23			
3150 SocS 30	618	365	0.33			
3180 Econ 30	228	143	0.35			
3190 SocSc 30	14	4	0.00			
Sub-total	2176	1270	0.22			
3200 Math 30	498	283	0.33			
3211 Math 31	302	197	0.36			
3216 Math 33	268	167	0.32			
3230 Biol 30	275	137	0.33			
3240 Chem 30	185	88	0.27			
3260 Phys 30	226	161	0.31			
3275 Phys 32	18	11	0.27			
Sub-total	1772	1044	0.31			
3300 Fr 30	164	99	0.37			
3315 Ger 30	77	59	0.44			
3325 Latin 30	6	5	0.20			
3365 Uk 30	13	9	0.44			
Sub-total	260	172	0.36			
3400 Art 30	120	91	0.37			
3500	378	246	0.35			
3545 OffPrac 30	109	84	0.51			
3537 BusF 30	130	80	0.30			
3560 ShHand 31	53	26	0.23			
3555 ShHand 30	37	21	0.29			
Sub-total	707	457	0.34			
TOTAL	5034	3034	0.31			

Droupout Rate 39.7%

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[1] Based on starters

lesson quality ("V") indicators in pin-pointing bad lessons, the first sample and the second sample of data were separated in several instances so that separate analyses could be completed for purposes of comparison. The results of the analysis for English 13, Social Studies 10, and Mathematics 15 are shown in the Table 28. The higher the lesson quality index the more unreliable the lesson. It will be noted in each case that unreliable lessons identified in Sample 1 correlate quite well with unreliable lessons in Sample 2. Table 29 provided a comparison of lessons in terms of difficulty.

Having concluded from the examples presented in Tables 28 and 29 that there was in several cases a significant degree of correlation between the two samples, the data from the two samples were combined and further analyzed. The analysis for a number of courses in grades 10, 11 and 12 are presented in Tables 30, 31 and 32. The courses selected for analysis represent major areas of the curriculum in each grade and also represent the 10-20-30 level sequences.

From the analyzed data in Tables 30, 31 and 32 it was possible to select a number of lessons that appeared to be unique: either they appeared to be difficult or they appeared to be unreliable. These lessons were listed and the teachers were asked to comment on their uniqueness. The teachers' comments are included in Appendix 9. In several cases the low quality (unreliable) lessons resulted from new concepts being introduced, perhaps without adequate preparation. Some of the lessons that appeared to be more difficult resulted from projects and essays.

The average lesson times for each course and in each grade (10 to 12) are presented in Table 33. The first observation that can be made is that

Table 28

Correlation of Lesson Quality Indicators "V" for
English 13, Social Studies 10, and
Mathematics 15

Lesson	English 13		Social Studies 10		Mathematics 15	
	Sample 1	Sample 2	Sample 1	Sample 2	Sample 1	Sample 2
1	.95*	.88*	.51	.46	.54	.54
2	1.03*	.74	.68*	.61*	.75*	.47
3	1.03*	.91*	.44	.44	.57	.59
4	.77	.88*	.72*	.54	.63	.46
5	.51	.46	.44	.54	.53	.54
6	.81	.88*	.68*	.63*	.48	.56
7	.68	.62	.43	.57	.41	.57
8	.63	.69	.43	.54	.37	.47
9	.62	.59	.61	.51	.45	.72*
10	.68	.83*	.46	.40	.68	.40
11	.50	.42	.53	.56	.67	.35
12	.70	.64	.64*	.49	1.14*	.73*
13	.65	.49	.56	.49	.56	.49
14	.41	.52	.59	.48	.48	.33
15	.61	.60	.49	.35	.54	.53
16	1.05*	.54	.40	.57	.55	.41
17	.54	.55	.45	.45	.62	.44
18	.57	.82*	.45	.59	.64	.41
19	.42	.46	.43	.59*	.61	.47
20	.47	.42	.58	.45	.62	.55
Mean	0.68	0.65	0.52	0.51	0.59	0.50
Std. Dev.	0.20	0.17	0.10	0.07	0.16	0.11
Correlation Index	0.61^1		0.21		0.20	

$*V > \bar{X} + 1$ S.D.

^{1} $P > 0.01$

Table 29

Correlation of Lesson Difficulty Indicators "$\overline{X}$" for English 13, Social Studies 10, and Mathematics 15

Lesson	English 13 Sample 1	English 13 Sample 2	Social Studies 10 Sample 1	Social Studies 10 Sample 2	Mathematics 15 Sample 1	Mathematics 15 Sample 2
1	1.89	1.83	5.77	6.93*	4.20	4.03
2	2.36	1.89	7.14*	6.22	4.50	4.09
3	2.37	2.23	4.73	4.93	3.74	4.26
4	3.21	2.71	4.39	4.44	4.12	4.32
5	4.68	2.14	5.50	5.23	4.44	4.59
6	2.69	3.02	4.95	5.48	4.89	6.17
7	3.18	3.24	4.82	6.03	4.83	5.83
8	3.24	3.30	5.02	6.47	5.83	5.55
9	2.53	2.65	3.85	5.61	5.91	6.92
10	2.97	2.52	5.63	7.82*	6.81*	6.67
11	3.48	3.05	7.00*	8.05*	4.96	4.95
12	3.26	3.23	5.79	6.60	6.70*	7.93*
13	7.50*	5.67*	4.57	6.70	6.75*	6.40
14	3.75	4.17	5.16	5.70	6.12	6.22
15	6.82*	6.47*	6.27	4.61	5.98	6.46
16	3.62	2.44	5.93	4.33	5.39	5.85
17	5.66*	5.75*	5.22	4.50	6.99*	5.12
18	3.38	3.69	5.50	3.30	6.22	5.47
19	3.47	4.23	6.48*	4.41	5.93	4.95
20	5.78*	4.75	5.86	4.90	7.72*	7.50*
Mean	3.79	3.45	5.43	5.61	5.60	5.66
Std. Dev.	1.52	1.34	0.85	1.24	1.10	1.13
Correlation Index[1]	0.85[1]		0.20		0.75[1]	

*Lesson difficulty $>\overline{X}$ + 1 S.D.

[1] $P>0.01$

Table 30

An Analysis of Selected Grade 10 Courses

Time in Hours XXX
Quality Index "V" XXX

Course Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Course Workload
1100 English 10	3.83* 0.66°	4.76 0.61	5.39 0.57	6.73 0.52	6.36 0.46	6.71 0.79°	6.73 0.43	6.54 0.45	4.17* 0.43	9.39* 0.70	4.89 0.46	7.10 0.58	4.22* 0.78°	10.09* 0.70°	11.97* 0.47	10.80* 0.63	9.80* 0.56	6.46 0.47	5.54 0.45	6.25 0.35	Total 137.73 $\bar{X}$=6.88 S.D.=2.33
1115 English 13	1.86* 0.91°	2.13* 0.89°	2.30 0.97°	2.96 0.82°	3.41 0.48	2.86 0.85°	3.21 0.65°	3.27 0.66°	2.59 0.60	2.75 0.76	3.27 0.47	3.25 0.67°	6.59* 0.57	3.96 0.47	6.65* 0.61	3.03 0.80°	5.71* 0.55	3.54 0.70	3.85 0.44	5.27* 0.44	Total 72.46 $\bar{X}$=3.62 S.D.=1.38
1150 Social Studies 10	6.35* 0.48	6.68* 0.64	4.83 0.44	4.42* 0.63	5.37 0.49	5.22 0.65°	5.43 0.50	5.75 0.48	4.73 0.56	6.73* 0.43	7.53 0.55	6.20 0.56	5.64 0.52	5.43 0.53	5.44 0.42	5.13 0.48	4.86 0.45	4.40* 0.52	5.45 0.51	4.88 0.48	Total 110.47 $\bar{X}$=5.52 S.D.= .82
1200 Math 10	8.00 0.33	7.37 0.45	6.19 0.67°	6.33 0.60	7.82 0.62	6.57 0.36	6.54 0.31	8.59* 0.45	7.73 0.39	6.84 0.46	7.75 0.57	9.31* 0.39	7.99 0.44	6.93 0.69	6.29 0.42	5.96* 0.49	5.87* 0.56	5.34* 0.61	5.65* 0.22	7.38 0.46	Total 140.45 $\bar{X}$=7.02 S.D.=1.05
1216 Math 13	5.75 0.73°	5.20 0.55	5.22 0.54	6.01 0.62	7.54* 0.69°	5.97 0.52	6.65 0.65°	5.80 0.58	6.08 0.60	6.68 0.51	5.36 0.54	4.14* 0.59	5.92 0.59	6.20 0.80°	6.38 0.85°	5.99 0.66°	5.74 0.80°	6.43 0.60	3.75* 0.35	10* -	Total 112.70 $\bar{X}$=6.04 S.D.=1.26
1225 Math 15	4.12* 0.54	4.30* 0.61°	4.00* 0.57	4.22* 0.55	4.52* 0.53	5.53 0.52	5.33 0.49	5.69 0.42	6.42 0.58	6.74* 0.54	4.96 0.51	7.32* 0.94°	6.58 0.53	6.17 0.41	6.22 0.53	5.62 0.48	6.06 0.53	5.85 0.53	5.44 0.53	7.61* 0.59	Total 112.70 $\bar{X}$=5.64 S.D.=1.05
1260 Physics 10	7.09 0.77°	6.46 0.50	5.48 0.51	7.86* 0.61°	5.01 0.55	3.44* 0.60°	6.00 0.49	5.24 0.54	8.40* 0.27	5.51 0.46	6.23 0.56	7.00 0.50									Total 73.72 $\bar{X}$=6.14 S.D.=1.35
1300 French 10	2.25* 0.73	2.56* 0.84°	3.92 0.95°	3.77 1.02°	2.13* 0.83°	3.63 0.62	3.86 0.58	5.31 0.63	5.78 0.99°	5.52 0.64	3.50 0.59	4.60 0.57	5.45 0.46	7.78* 0.77°	6.91* 0.87°	5.70 0.66°	4.83 0.50	4.13 0.74	5.13 0.44	4.23 0.30	Total 90.99 $\bar{X}$=4.55 S.D.=1.46
1315 German 10	3.95 0.72°	4.98* 0.60	3.88 0.86°	3.94 0.62	4.27 0.49	4.24 0.62	3.83 0.54	4.31 0.43	4.31 0.44	4.62* 0.59	4.98* 0.50	4.67* 0.57	4.04 0.54	4.54* 0.69°	4.10 0.39	4.04 0.44	4.98* 0.40	4.97* 0.34	4.58* 0.30	4.85* 0.49	Total 88.08 $\bar{X}$=4.04 S.D.=0.40
1415 Health and P.D.	2.23* 0.63	4.75 0.71°	4.81 0.62	4.64 0.49	4.64 0.57	3.84 0.66°	3.85 0.50	4.84 0.55	4.41 0.55	4.90 0.59	4.49 0.57	4.95 0.55	4.71 0.53	3.87 0.58	4.41 0.45	4.86 0.51	4.98 0.51	6.30* 0.56	3.94 0.55	- -	Total 85.42 $\bar{X}$=4.49 S.D.=1.23
1501 Accounting 10	3.60 0.56	4.04 0.84°	5.64* 0.83°	4.22 0.35	4.94 0.49	4.72 0.45	4.37 0.41	4.18 0.42	7.35* 0.61	3.12* 0.68°	3.00* 0.79°	3.13* 0.63									Total 52.31 $\bar{X}$=4.36 S.D.=1.23
1550 Recordkeeping 10	3.45 0.41	2.73* 0.45	3.14 0.48	3.35 0.41	3.25 0.44	2.89 0.47	3.25 0.55	4.58* 0.38	3.08 0.51	2.81* 0.59	3.96 0.46	4.60* 0.34	4.25* 0.46	2.56* 0.57	2.55* 0.54	3.96 0.41	3.68 0.48	3.28 0.39	3.93 0.35	3.62 0.44	Total 68.92 $\bar{X}$=3.45 S.D.=0.62
1565 Typing 10	4.24* 0.59	4.45 0.60	4.37 0.47	4.76 0.52	5.03 0.46	5.42 0.65°	4.61 0.61	4.66 0.46	4.41 0.56	6.61 0.73°	6.99 0.66°	8.33* 0.74°	5.81 0.55	5.62 0.44	6.61 0.52	6.79 0.42	7.33 0.38	8.41* 0.42	9.75* 0.52	11.07* 0.64	Total 125.27 $\bar{X}$=6.26 S.D.=1.94

* Indicates lesson difficulty which falls beyond $\overline{X} \pm 1$ S.D.
° Lesson quality index falls below 0.65 (the approximate average for courses examined).

Table 31

An Analysis of Selected Grade 11 Courses

Time in Hours XXX
Quality Index "V" XXX

Course Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Course Workload
2100 English 20	9.25 0.51	8.20 0.57	7.25 0.41	9.39 0.49	7.19 0.42	8.93 0.42	10.86* 0.53	8.63 0.54	8.21 0.69°	8.83 0.71°	8.50 0.56	7.35 0.34	8.08 0.53	8.81 0.48	10.00* 0.70°	8.95 0.71°	7.44 0.29	6.44* 0.33	7.94 0.38	4.70° 0.41	164.96 x̄=8.25 S.D.=1.33
2115 English 23	7.60 0.40	6.07* 0.54	6.49 0.45	9.16 0.54	5.62* 0.44	7.41 0.59	11.62 0.91°	8.42 0.33	6.26* 0.53	10.70 0.74°	[illegible] [illegible]	10.27 0.48	15.88* 1.15°	15.72* 1.28°	11.89 1.20°	8.01 0.48	9.65 0.38	6.86 0.28	11.60 0.71°	8.6 0.61	185.68 x̄=9.28 S.D.=2.93
2150 Social Studies 20	7.23 0.58	7.45 0.72°	7.45 0.72°	5.50* 0.42	9.17 0.87°	7.91 0.67°	6.93 0.66°	9.62 0.64	6.91 0.67°	8.11 0.60	7.59 0.89°	8.18 0.76°	9.97 0.70°	6.65 0.45	8.04 0.52	13.50 0.60	10.00 0.68°	12.08* 0.46	7.33 0.21	10.80* 0.58	170.33 x̄=8.52 S.D.=1.97
2200 Math 20	6.36* 0.40	9.24* 0.29	9.44* 0.43	7.63 0.46	8.59 0.31	7.68 0.49	8.91 0.45	6.77* 0.43	8.38 0.43	7.83 0.44	7.94 0.40	6.06* 0.45	7.57 0.48	8.38 0.48	8.58 0.51	9.11* 0.40	8.22 0.27	8.72 0.47	6.45* 0.47	8.17 0.28	160.03 x̄=8.00 S.D.=0.98
2216 Math 23	3.95* 0.62	8.84* 0.50	6.03 0.88°	4.52 0.51	4.20* 0.44	5.38 0.64	7.14* 0.71°	5.65 0.44	6.06 0.48	5.10 0.48	4.21* 0.39	7.74* 0.63	5.86 0.50	7.53* 0.48	5.21 0.50	6.21 0.38	7.13* 0.42	4.20* 0.61	3.95* 0.64	4.38 0.90°	113.29 x̄=5.66 S.D.=1.43
2225 Math 25	4.72 0.40	4.59* 0.39	6.09 0.52	5.49 0.36	4.86* 0.38	5.95 0.38	5.82 0.37	6.12 0.36	6.71 0.43	6.34 0.63	7.20 0.49	6.15 0.46	5.86 0.76°	5.29 0.40	6.49 0.50	8.30* 0.59	7.89* 0.53	6.68 0.43	8.20* 0.60	7.02 0.57	125.77 x̄=6.29 S.D.=1.07
2260 Physics	5.58 0.59	7.28* 0.67	6.06 0.85°	6.60* 1.01°	4.19 0.52	5.37 0.51	5.78 0.53	4.79 0.55	5.18 0.59	5.07 0.56	4.61 0.53	2.75* 0.69°									63.26 x̄5.27 S.D.=1.17
2300 French 20	7.17* 0.62	6.46 0.46	5.63 0.52	6.03 0.41	5.23 0.45	6.75 0.59	5.64 0.44	4.06* 0.38	4.09* 0.55	4.95 0.41	4.91 0.41	5.14 0.51	4.79 0.52	4.67 0.44	4.42 0.64	4.80 0.46	6.00 0.51	7.13 0.40	8.00* 0.33	9.33* 0.36	115.20 x̄=5.76 S.D.=1.37
2315 German 20	6.05 0.67°	8.48* 0.82°	9.67* 0.51	5.75 0.30	4.17* 0.27	5.25 0.34	6.71 0.44	5.70 0.65°	5.96 0.49	6.33 0.44	7.00 0.41	6.37 0.52	8.06* 0.32	6.06 0.36	6.10 0.19	5.94 0.43	7.06 0.51	6.94 0.42	4.00* 0.25	5.50 0.33	127.10 x̄=6.36 S.D.=1.33
2501 Accounting 20	5.61 0.47	6.26 0.52	4.91* 0.65°	6.38 0.48	7.62 0.51	10.32 0.77°	5.89 0.72°	8.31 0.72°	8.29 0.49	9.73 0.65°	12.75° 0.32	14.4° 0.26									100.47 x̄=8.37 S.D.=2.95
2540 Marketing 20	4.00 0.37	3.32 0.41	2.88 0.29	3.00 -	3.00 -	3.13 0.20	2.67 0.22	4.25 -	4.50 0.69°	2.83 0.10	2.00* -	2.00* -	4.17 2.36°	5.67* 0.57	5.38* 0.49	4.10 0.46	3.40 0.46	4.00 0.43	4.17 0.35	4.00 0.25	72.47 x̄=3.62 S.D.=0.98
2565 Typing 20	5.30 0.49	6.55 0.46	6.70 0.57	4.67 0.51	5.29 0.43	6.23 0.41	4.44* 0.32	3.40* 0.41	4.71 0.34	6.80 0.16	4.67 0.33	6.90 0.42	5.33 0.11	5.00 -	6.33 0.39	8.00 -	9.50* -	9.00* -	11.00* -	9.00* -	128.82 x̄=6.44 S.D.=1.98

* Indicates lesson difficulty which falls beyond X ± 1 S.D.
o Lesson quality index falls below 0.65 (the approximate average for course examined)

Table 32

An Analysis of Selected Grade 12 Courses

Time in Hours xxx
Quality Index "V" xxx

Course Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Course Workload
3100 English 30	12.13 0.43	10.75* 0.44	15.92* 0.69	14.56 0.48	14.56 0.40	12.07 0.38	10.57* 0.58	9.98* 0.69	11.84 0.49	14.98 0.68	10.48* 0.47	13.30 1.02	13.14 0.60	14.11 0.70	16.96* 1.09	10.20* 0.42	11.82 1.05	11.78 0.76	16.17* 0.91	15.56* 0.71	260.88 $\bar{X}$=13.04 S.D=2.19
3115 English 33	6.81 0.52	6.24 0.55	7.24 0.60	7.75 0.41	9.46 0.75°	8.60 0.41	7.90 0.52	7.64 0.46	14.33* 0.51	10.74 0.59	12.59 0.87°	10.31 0.87°	11.90* 0.45	12.36* 0.72°	7.55 0.47	9.10 0.46	7.87 0.40	7.09 0.65	6.92 0.52	2.93* 0.38	175.34 $\bar{X}$=8.77 S.D.=2.65
3150 Social Studies 30	6.83 0.50	7.49 0.47	8.70 0.49	8.02 0.45	7.59 0.58°	22.35* 0.52	.73 0.50	8.61 0.45	8.92 0.49	9.50 0.46	8.60 0.46°	7.12 0.51	8.33 0.66	10.68 0.70°	8.84 0.75°	8.86 0.46	9.01 0.35	7.42 0.40	8.17 0.51	8.66 0.74	180.43 $\bar{X}$=9.02 S.D.=3.28
3200 Math 30	8.51 0.42	10.66 0.54	6.98 0.42	7.39 0.51	7.70 0.38	7.67 0.32	6.73 0.40	7.84 0.36	6.24 0.60	8.83 0.53	5.14 0.43	7.13 0.47	5.50 0.56	6.88 0.51	6.88 0.37	7.47 0.32	7.25 0.47	6.61 0.39	8.15 0.40	8.05 0.52	147.61 $\bar{X}$=7.38 S.D.=1.19
3211 Math 31	8.96 0.41	7.81 0.33	9.19* 0.31	8.89 0.33	8.93 0.44	8.72 0.28	9.70* 0.48	7.72 0.37	8.81 0.50	6.89* 0.64°	8.80 0.32	8.71 0.34	7.95 0.29	6.43* 0.44	6.71* 0.41	6.5 * 0.48	7.76 0.38	7.14 0.38	8.18 0.43	6.73 0.51	160.53 $\bar{X}$=8.03 S.D.=1.01
3216 Math 33	7.16 0.49	7.27 0.38	5.68 0.42	7.12 0.43	7.93 0.48	7.21 0.47	5.74 0.45	5.98 0.55	8.98 0.47	10.00 0.40	7.24 0.43	8.33 0.35	8.65 0.29	6.86 0.44	8.64 0.36	9.54 0.37	9.15 0.50	7.63 0.61	8.63 0.52	7.13 0.76	154.87 $\bar{X}$=7.74 S.D.=1.23
3260 Physics 30	5.55 1.36°	5.83 0.44	6.17 0.49	7.42 0.50	5.13 0.58	6.47 0.51	8.62* 0.67	7.58 0.86°	8.60* 0.64	7.19 0.60	8.13* 0.61	4.78 0.59	5.14* 0.50	5.10* 0.44	5.63 0.46	6.50 0.55	7.11 0.45	4.79* 0.55	6.60 0.55	9.60* 0.41	131.94 $\bar{X}$=6.60 S.D.=1.41
3312 French 30	4.86 0.69	5.98 1.06°	4.37 0.45	4.98 0.46	3.92* 0.43	4.84 0.50	3.73* 0.50	6.17 0.71	6.82* 0.72	7.18* 0.91°	5.33 0.71	6.50 0.87°	3.28* 0.54	6.35 0.71	4.96 0.43	5.70 0.41	5.00 0.83°	7.43* 1.08°	5.50 0.91°	7.75* 1.04°	110.47 $\bar{X}$=5.52 S.D.=1.23
3315 German 30	4.28* 0.58	4.72* 0.54	5.21 0.67	4.88 0.59	5.74 0.60	6.25 0.63	5.22 0.56	4.35* 0.49	8.29 0.87°	7.70* 1.07°	6.13 0.59	4.90 0.49	5.15 0.49	6.18 0.67	6.71 0.41	5.21 0.26	6.25 0.32	6.06 0.43	7.25* 0.45	7.81* 0.68	118.29 $\bar{X}$=5.91 S.D.=1.17
3501 Accounting 30	9.52 1.11°	7.40 0.38	5.71 0.40	7.73 0.48	7.47 0.51	5.87 0.41	6.23 0.45	6.32 0.47	6.26 0.52	10.52 0.48	9.70 0.48	7.37 0.45	8.23 0.45	5.60 0.80°	6.72 0.52	5.52 0.41	3.00* 0.42	6.38 0.53	13.1 * 0.40	10.92* 0.47	149.57 $\bar{X}$=7.48 S.D.=2.31
3545 Office Proc 30	4.00 1.00	4.36 0.78	4.93 0.61	4.77 0.75	5.70 0.62	5.03 0.67	4.13 0.55	3.96 0.65	3.45 0.79	3.11 0.51	5.50 0.70	4.14 0.93	3.82 0.63	4.29 0.91	2.63 0.58	3.75 0.55	3.85 0.52	4.18 0.63	3.40 0.59	3.64 0.69	82.64 $\bar{X}$=4.13 S.D.=0,76
3537 Business Found 30	5.00 0.71°	4.88 0.53	6.38 0.69°	5.58 0.61	5.10 0.30	4.00 0.52	4.17 0.63	3.86 0.65	4.07 0.47	5.32 0.47	7:56* 1.08°	8.15* 0.83°	3.92 0.60	4.23 0.41	5.19 0.93°	5.57 0.40	8.86* 0.49	7.67* 0.46	5.00 0.35	3.00* ----	108.51 $\bar{X}$=5.43 S.D.=1.56

* Indicates lesson difficulty which falls beyond $\overline{X} \pm 1$ S.D.

○ Lesson quality index fall below 0.65 (approximate average for course examined)

Table 33

A Comparison of Course Workloads

Lesson Average XXX
Standard Dev. XXX

Course Identification	Grade 10	Grade 11	Grade 12	Average Hours
English	6.88*	8.25	13.04*	9.39*
10, 20, 30	2.33	1.33	2.19	
English	3.62*	9.28*	8.77	7.22
13, 23, 33	1.38	2.33	2.65	
Social Studies	5.52	8.52	9.02	7.69
10, 20, 30	0.82	1.97	3.28	
Math	7.02*	8.00	7.38	7.47
10, 20, 30	1.05	0.98	1.19	
Math	6.04	5.66*	8.03	6.58
13, 23, 31	1.26	1.43	1.01	
Math	5.64	6.29	7.74	6.56
15, 25, 33	1.05	1.07	1.23	
Physics	6.14	5.27*	6.60	6.00
10, 20, 30	1.35	1.17	1.41	
German	4.04	6.36	5.91	5.44
10, 20, 30	0.40	1.33	1.17	
French	4.55	5.76	5.52	5.28
10, 20, 30	1.46	1.37	1.23	
Health and P.D.	4.49	-	-	4.49*
	0.78			
Accounting	4.36	8.37	7.48	6.74
10, 20, 30	1.23	2.95	2.31	
Rec. Keep. 10,	3.45*	3.62*	4.13*	3.73*
Mktg. 20, O.P. 30	0.62	0.98	0.76	
Typing/Bus Fdns.	6.26	6.44	5.43	6.04
10, 20, 30	1.94	1.98	1.56	
Mean lesson time ($\bar{X}$)	5.23	7.23	7.42	6.36
Standard Deviation	1.21	1.47	2.29	1.47
Average course length (5 credit hours)	104.60	144.60	148.40	127.20

*Course average is beyond $\bar{X} \pm 1$ S.D. hours.

The average course completion time varies considerably. The second observation is that courses in Grade 12, on the average, require approximately 40 percent more work than their counterparts in Grade 10.

The minimum amount of instructional time in a five credit course is specified in the Junior/Senior High School Handbook 1975-76 (1975:10) as 125 hours. It may be expected that most students will do some homework and for the purpose of this analysis it was assumed that they would probably do about one hour per week (in each course) for 40 weeks for an additional 40 hours. Combining these two figures yields a time of 165 hours to earn five credits in a regular classroom. To earn five credits through correspondence instruction, on the average requires about 77 percent of that amount of work. Stated another way, students who are required to take regular instruction appear to be frequently occupied in other than course-related activity. Grade 10 students (Table 34) are required to spend an average of 60 hours per year in these activities, grade 11 students spend 20 hours per year, and grade 12 students spend 17 hours. Another way of looking at it may be that students in regular classrooms do no homework. By eliminating time allocated to homework correspondence instruction and classroom instruction are approximately equivalent in their demands on students' time.

In a number of instances the analyzed data suggests that first lessons in courses tend to differ from other lessons in terms of difficulty or quality. Pfeiffer (1970) contends that one of the problems of getting the students to complete courses is to get them through the first lesson. If the student completes the first lesson the chances are considerably enhanced that he will complete the course. Presented in Table 35 are the correlations between the difficulty of first lessons and

Table 34

A Comparison of Student Workloads (Hours of Work) in Correspondence and Regular Instruction

	Regular Instruction[1] hrs	ACS			
		Grade 10 hrs	Grade 11 hrs	Grade 12 hrs	Overall hrs
5 credits	165.0	104.6	144.6	148.4	127.2
		*63.3%	*87.6%	*89.9%	*77.1%

*Percentage of work required in regular instruction

[1] 125 hours + 40 hours homework per year

Table 35

Relationships Between Course Completion Rates and Lesson Difficulty (Pearson Product-Moment Correlations)

	Lesson 1	Lesson 2	Lesson 3	Lessons 1-3(Ave)	Lessons 1-20(Ave)	1974/75[1]	1975/76[1]	1975/76[2]
1974/75[1]	-0.364*	-0.379*	-0.264	-0.365*	-0.527*	-----	0.889*	0.810*
1975/76[1]	-0.384*	-0.339*	-0.286	-0.364*	-0.550*	0.889*	----	0.958*
1975/76[2]	-0.261	-0.192	-0.209	-0.237	-0.450*	0.810*	0.958*	----

[1] Completion rates based on total enrollments.

[2] Completion rates based on actual starters.

*The critical value of the correlation coefficient at the 0.05 level is 0.325.

course completion ratics. Many of the correlations are significant.

Discussion

Comparison of the ACS to a standard which describes other correspondence schools is difficult primarily because research has not provided this standard. On the other hand specific cases were cited of completion rates ranging from 20 percent up to 50 and 60 percent for students with experience in correspondence study. The most exciting evidence was derived from an Israeli experiment (Weissbrot, 1969) where 85 percent of the 14-year old students completed successfully. While these latter results compare favorably to the completion rate of 90 percent (estimated in the cost-benefit analysis) for regular high-school instruction, the ACS's completion rate would appear to be no better than average.

A further purpose of this section has been to discuss the analysis of the instructional program at the ACS in an attempt to provide insight into ways the instructional program might be modified to improve completion rates.

At this point in time the procedures for developing quality and difficulty indices for lessons are far short of perfect. There does appear to be however, some evidence that quality and difficulty indices can be developed. In the two samples of data collected there was a moderate degree of correlation between indices developed in Sample 1 and in Sample 2. Moreover, when teachers were asked about the quality of "flagged" lessons, they tended to confirm that something in the lesson had produced uncertainty. Generally the uncertainty was attributed to new concepts or inadequate preparation on the part of the students.

The data needed to perfect indices of quality and difficulty are already present at the ACS and is to be found in the students' estimates of time spent in completing their lessons. The smooth flow of lessons through the ACS makes collecting of the necessary data possible at a number of points in the flow path.

The question which may be fairly asked is why one would choose to develop and use indices of quality and difficulty. The answers seem to be self-evident. Indices of quality can be used to screen out particularly bad or weak lessons. If completed on a regular basis, quarterly, every six months, or annually, it would be possible to rank-order all the lessons in a course in terms of quality. The poorest lessons could be routinely set aside for further development.

Lesson difficulty indices can be used to equalize the workloads demanded by courses of equivalent credit value, to predict the probable completion time for any student, and to alter lessons so that students are encouraged and motivated to complete. Lesson difficulty appears to have a significant relationship to course completion. When these lesson difficulty indices are correlated with completion rates based on starters only, the significance no longer holds. It would certainly appear that a major deterrent to course completion is the difficulty of first lessons. When a student receives the course material and examines it, in particular the first lesson, the decision is very often made to abandon.

If, as Dinkmeyer and Dreikurs (1963:49) postulate, the magnitude of a task overwhelms students, it may be worthwhile to consider the possibility of sending students only part of a course initially. The remainder could be shipped as required.

Conclusion and Recommendations

Conclusions

When compared to the range of standards set by other correspondence shcools (20 to 85 percent completion) the ACS falls near the average with an overall completion rate of 25 percent (approximately 36 percent when calculated by the NU EA formula). In-school students fared somewhat better and rivalled figures of 35-40 percent reported by other similar institutions. At the same time the out-of-school students compared favorably with private correspondence schools in the range of 20 percent completion.

The overall picture doesn't tell the whole story. Completion rates (based on starters) soared to 50 percent in some 5-credit courses and up to 69 percent in some 2- and 3-credit courses.

It has also been demonstrated that course quality indicators can be developed and readily applied to correspondence instruction where the flow of lessons makes the necessary collection of data feasible.

When lessons are carefully analyzed it becomes apparent that both lesson quality and lesson difficulty vary. Some lessons contain much more uncertainty (lack information) than others. At the same time some lessons are two or three times as difficult as others. The difficulty of first lessons in courses correlates significantly and negatively with course completion.

The difficulty of courses also varies, that difficulty being the average difficulty of the component lessons in the course. Instances were recorded where more than 3.5 times the work was required to earn five credits in one course compared to another (see Table 33).

Correspondence study at the ACS appears to be a more efficient form of study for students than regular instruction, requiring only 77 percent of the effort required in regular instruction.

Finally the feasibility of shipping only five lessons in the initial mailing to students should be considered as a way of motivating them to higher completion rates.

Recommendations

It is recommended that:

1. Indicators of lesson difficulty and quality should be developed and tested. Efforts should be given to revising worst lessons in courses where completion rates are low.
2. Attempts should be made to equalize the workload demanded of students in courses of equal credit value. This may not be easy in as much as it is the curriculum quides for the department which ultimately determine the minimum workload in a specific course.
3. The feasibility of including only the first five lessons in the initial shipment to students should be investigated. This may avoid discouraging students before they begin their studies and will reduce overall costs in as much as the remaining lessons will be shipped to only those students who actually start their studies (approximately 70 percent of the total enrollment).

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A STUDY OF ATTITUDES TOWARDS CORRESPONDENCE STUDY

A review of the literature suggests that correspondence education is not regarded as highly as other more traditional modes of education. Allen (1971:85-90) asserts that correspondence study is regarded as a second-rate choice. Stein (1971:93-97) tends to support this claim in so far as educators are concerned but points out that others (non-educators) regard correspondence study as being as good as other modes of study.

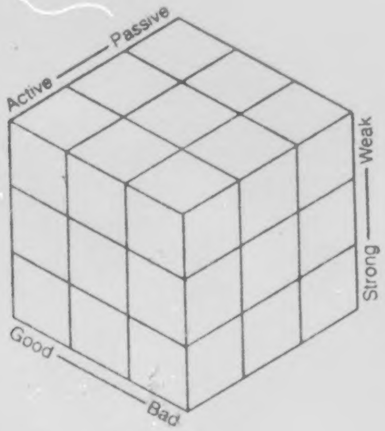
Because completion rates at the ACS have the potential of being raised and because it was assumed that attitudes correlate with motivation it was decided to examine the attitudes held by a number of groups (those involved with correspondence education) towards learning by correspondence. Four general questions guided the research:

1. What are the attitudes of principals (of schools with correspondence students in their enrollments), ACS teachers, and correspondence students towards "learning by correspondence"?
2. How do attitudes towards "learning by correspondence" compare with attitudes towards "learning in the classroom"?
3. Do attitudes towards different aspects of learning bear a relationship to the locus of control indices for study respondents?
4. Is correspondence study a favorite (preferred) learning style for some students?

Research Design

Instruments for measuring attitudes towards correspondence instruction are uncommon. This is not surprising since so little research into correspondence study has been completed (Childs, 1971:229). Among the most useful attitude measuring techiques appeared to be those developed by Osgood (1957:189-216). He recommends the semantic differential as a device for measurement of attitude. Elizabeth Hall (1973: 58) describes Osgood's concept of semantic space.

> William Wordsworth once said that poetry sprang from "emotion recollected in tranquility." His words provide a surprisingly accurate description of the inner workings of the semantic-differential technique. The semantic differential forces every person to think like a poet. Faced with a pair of polar adjectives (hot/cold, young/old, sweet/sour, fair/unfair), one must place each concept to be judged on a seven-point scale. Boulders, for instance, are neither sweet nor sour, except to poets who write in metaphors. But, when one decides that a boulder is "slightly sour," he has created a metaphor. As Osgood says, "shared emotion appears to be the common coin of metaphor." Thus, the semantic differential measures the emotional or affective meaning that we attach to words.
>
> The semantic differential grew out of attempts to develop an objective way to measure meaning. Those attempts produced an objective measure of subjective states.
>
> When Osgood, George J. Suci, and Percy H. Tannenbaum began feeding the ratings made by their first hundred subjects into ILLIAC, the University of Illinios electronic digital computer, factor-analysis showed that most of the emotional meaning attached to words fell into one of the three dimensions: evaluation (good/bad); potency (strong/weak); or activity (active/passive).



> While Osgood and his colleagues continue to use additional dimensions of meaning in their early experiments (stability, tautness, novelty, receptivity, and aggressiveness), analysis always showed that the additional dimensions accounted for only a tiny portion of meaning. The most important of the five additional dimensions, for example, accounted for only two percent of the measured affective meaning. Therefore, these other dimensions were dropped from later studies they conducted.
>
> Once we know what a person believes is good or bad, strong or weak, active or passive, it is often possible to predict his behavior: the candidate he will vote for; the products he will buy. For example, when Osgood studied voter behavior in the 1952 Presidential election, he was able to predict, on the basis of undecided voters' ratings of persons and issues on the fair/unfair and strong/weak scales, which candidates they would eventually vote for. The semantic differential is an effective tool in psychotherapy, because it picks up personality and attitude changes during the course of treatment.
>
> Osgood and his colleagues have been exploring semantic space for nearly 20 years now, and their techniques have been validated in 25 different cultures. They have already produced a semantic atlas of 550 concepts from "accident" to "zero" as rated by American English speakers, and are now at work on the atlas for all 25 cultures.
>
> The universality of meaning these researchers have found for many concepts points up the basic similarity of the human species, despite wide differences in language, custom, dress, and skin color. In 1958, when it was possible to report strong similarities between meanings only for Japanese and American subjects, Roger W. Brown wrote, "Just over the horizon lurks the very important generalization - the various languages of the world operate with the same basic semantic dimensions, however much they disagree on the scaling of individual concepts like communism and capitalism. This conclusion would be a major disconfirmation of the 'linguistic relativity' postulated by Benjamin Whorf."
>
> Perhaps the semantic differential has shown that worldwide understanding is possible. Charles E. Osgood thinks so.

For purposes of measuring attitudes a questionnare was designed, by extracting from the thesaurus of adjective pairs (Osgood, 1957:37), with eight evaluative (good-bad) pairs and four pairs each of potency (strong-weak) and activity (active-inactive) adjectives. Two other adjective pairs (dependent-independent and rigid-flexible) were added in order to focus on preferred learning styles.

In order to provide a basis for comparison, or a reference point, three concepts were identified for testing. "Learning is..." was selected as the most global concept and one with which each respondent should be able to identify. A second reference concept "learning in the classroom is..." was chosen for the same reason. The third and crucial concept selected was "learning by correspondence is ...".

In order to shed light on the question of preferred learning styles, Rotter's (1966) Internal-External Locus of Control Instrument was used. This instrument purports to measure the degree to which respondents believe they are responsible for their state or condition (internal) or that their state or condition is determined by luck, fate, or external variables (external).

The study population consisted of those who were involved in correspondence education. Ten study groups were identified and the following random samples were drawn for analysis in this part of the study: principals of schools where some students were enrolled in correspondence study; ACS teachers; and correspondence students. Correspondence students were split into two categories; those attending school (in-school) and those who were not attending school (adults). Within each of these two categories were four sub-catergories: students who successfully completed the courses in which they had enrolled (successful); those who had completed about 75 percent of the course and had been inactive for at least two months (late dropouts); those who had completed 3-4 lessons and had been inactive for at least two months (early droupouts); and those who submitted no lessons (non-starters).

The study questionnaire, which included the Semantic Differential Instrument, the Internal-External Locus of Control Instrument, items pertaining to education alternatives available to students, items pertaining to reading habits, and demographic data, is included as Appendix 5.

Table 36 identifies the segments of the study population, the number of questionnaires distributed, the number returned, and the return ratios.

Findings

Attitudes

Table 37 shows that the concept learning was regarded more positively than the other two concepts while learning in the classroom was regared as significantly less attractive than learning by correspondence ...". Figures 18-20 show the attitudes (toward the three tested concepts) for each group positioned in semantic space. The space immediately surrounding the origin of the three axes is virtually meaningless. As the attitude takes on meaning and intensified it moves away from the origin.

Figures 21-23 are the profiles for the study group as they pertain to the concepts learning, learning in the classroom and learning by correspondence.

Table 36

Distribution of Study Population

Group		Questionnaires Distributed	Number Returned and Used*	Return Ratio
Principals		60	39	0.65
Teachers (ACS)		96	69	0.72
In-school	Successful	81	50	0.62
	Late Dropouts	80	37	0.46
	Early Dropouts	85	35	0.41
	Nonstarters	81	20	0.25
Adult	Successful	78	47	0.60
	Late Dropouts	77	26	0.34
	Early Dropouts	80	20	0.25
	Nonstarters	75	12	0.16
Total		793	355	0.45

*Late returns are not included.

Table 37

A Comparison of t Ratios for the Concepts "Learning is "Learning in the Classroom is", and "Learning by Correspondence is"

	Learning is... $\bar{X}$ = 22.46 S.D. = 10.96	Learning in the classroom is... $\bar{X}$ = 11.09 S.D. = 15.10	Learning by correspondence is... $\bar{X}$ = 14.06 S.D. = 14.12
Learning is...	---	11.47*	8.84*
Learning in the classroom is...	11.47*	---	2.70**
Learning by correspondence is...	8.84*	2.70**	---

* Significant beyond the 0.001 level using a two-tailed t Test.
** Significant beyond the 0.01 level using a two-tailed t Test.

Figure 18

Attitudes Towards The Concept
"Learning"

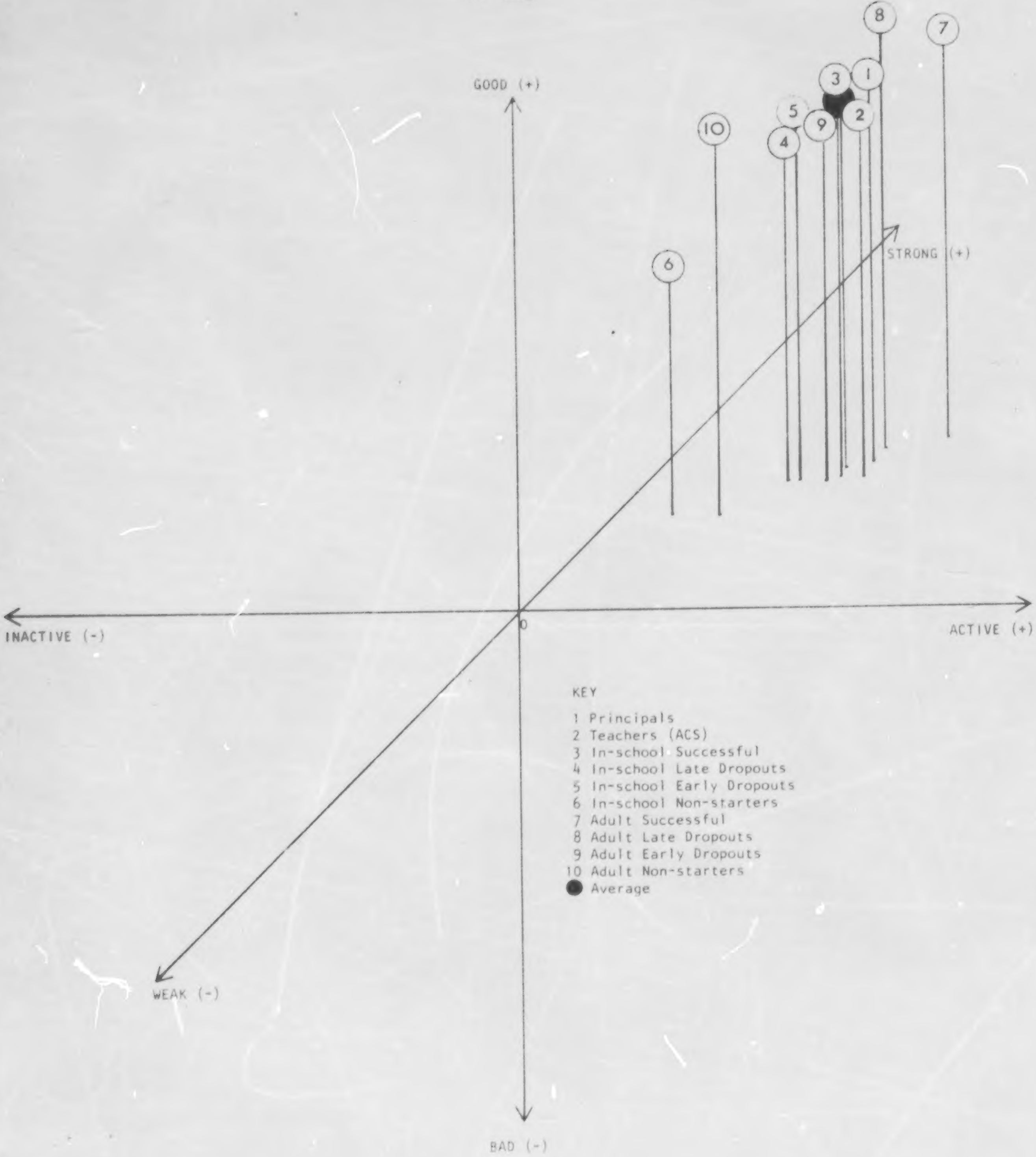


Figure 19

Attitudes Towards The Concept
"Learning In The Classroom"

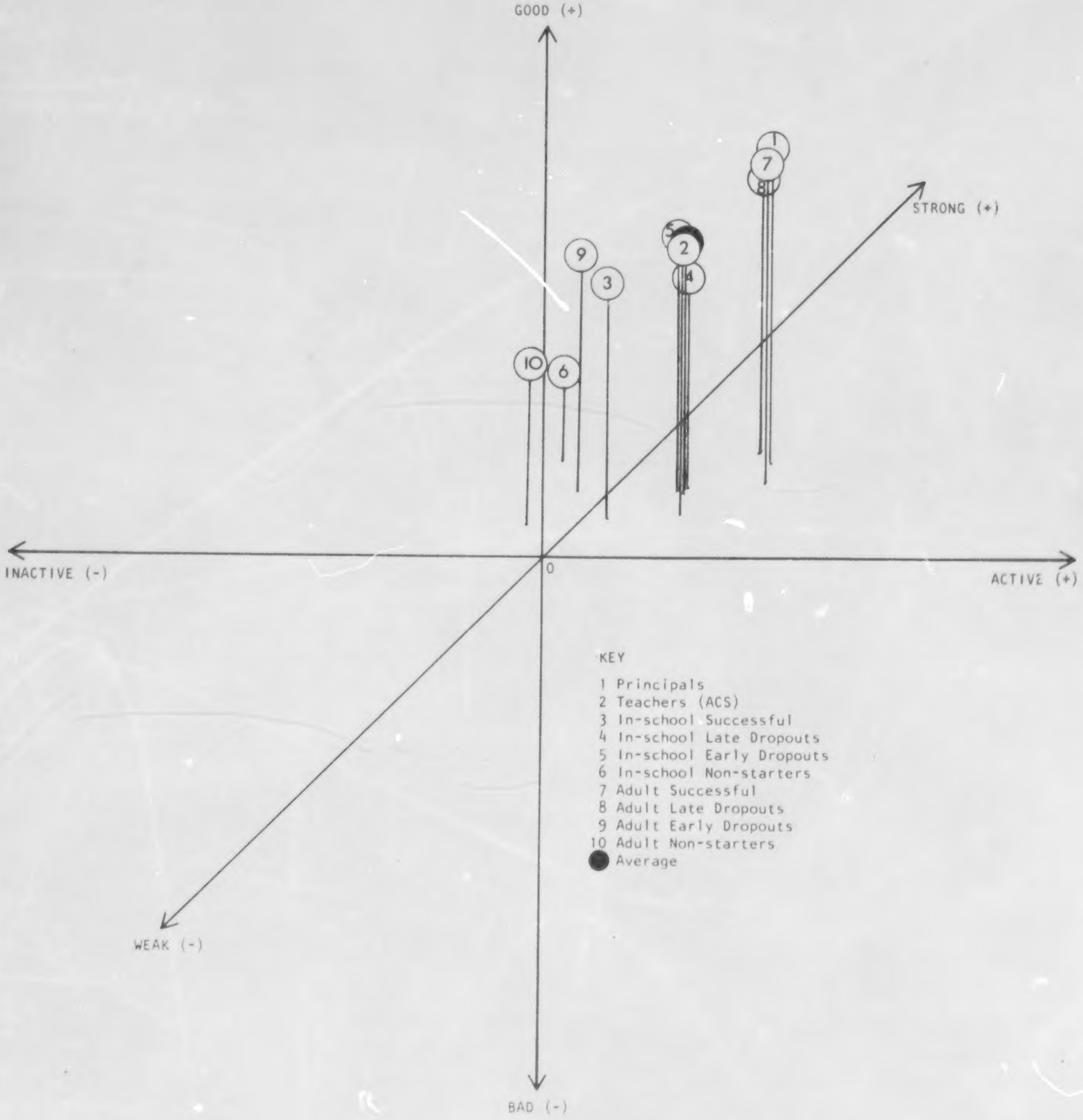


Figure 20

Attitudes Towards The Concept
"Learning By Correspondence"

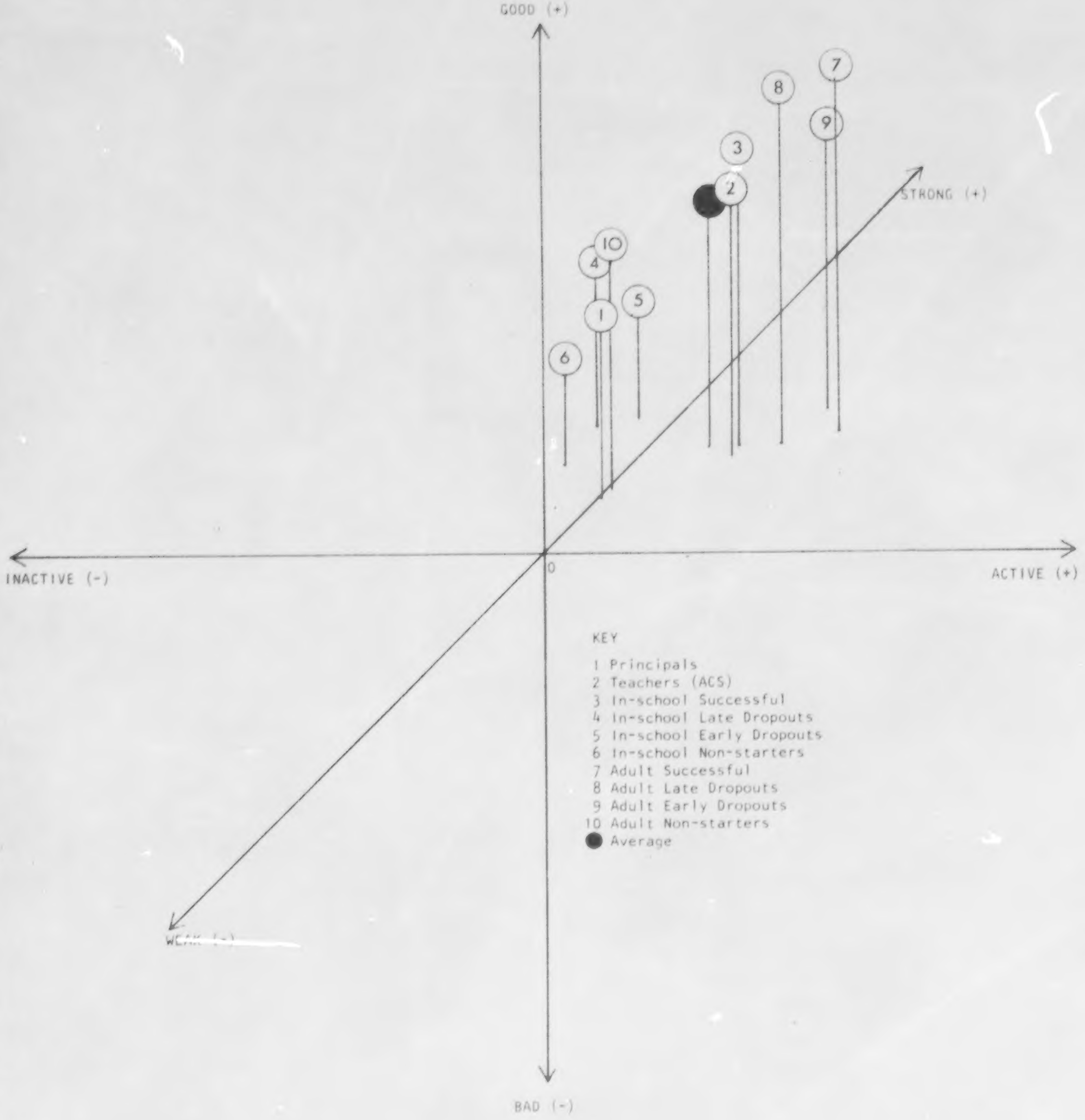


Figure 21

Profile of Attitudes for Males and Females

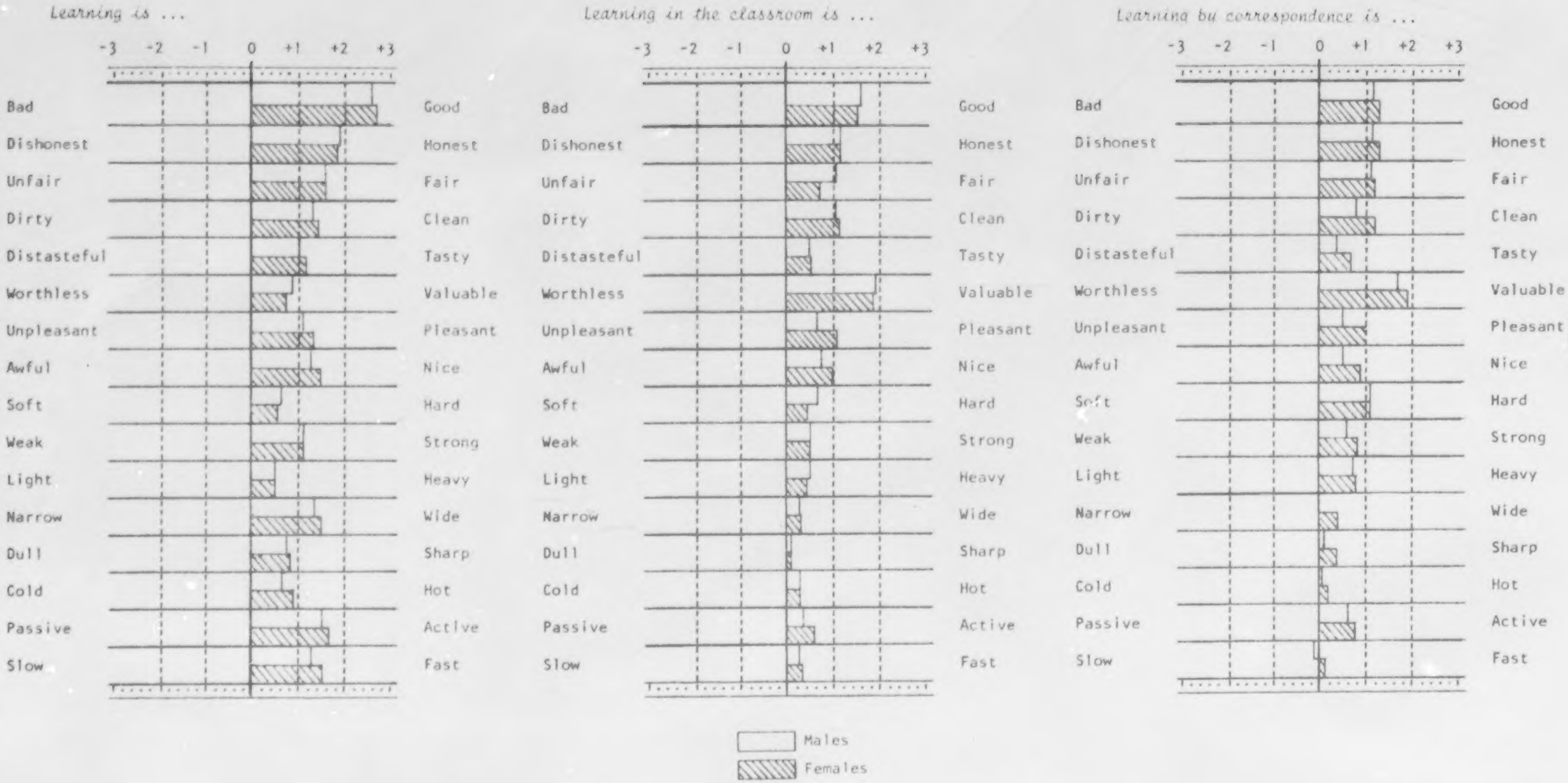
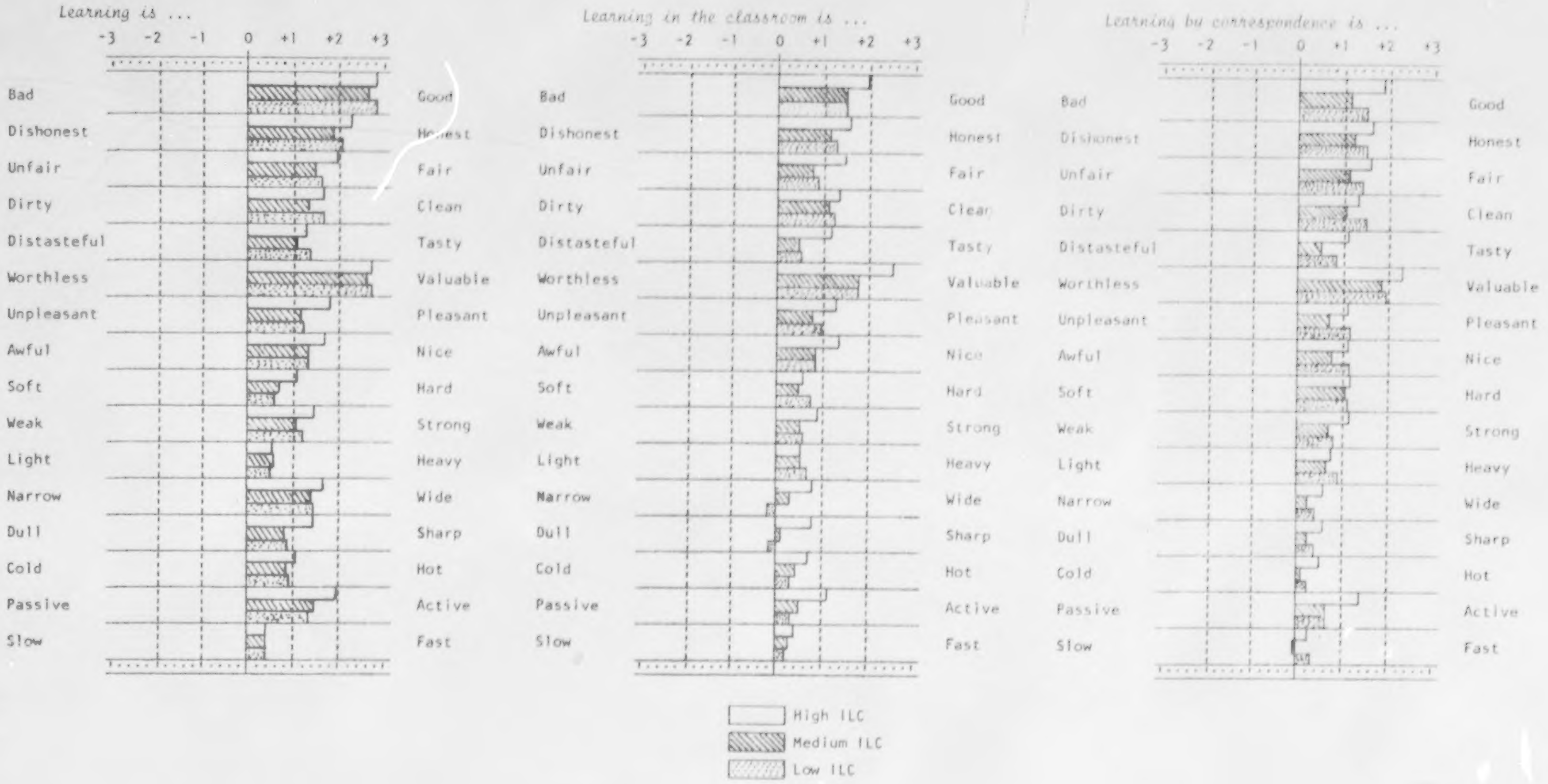


Figure 22

Profile of Attitudes for High, Medium and Low ILC Groups



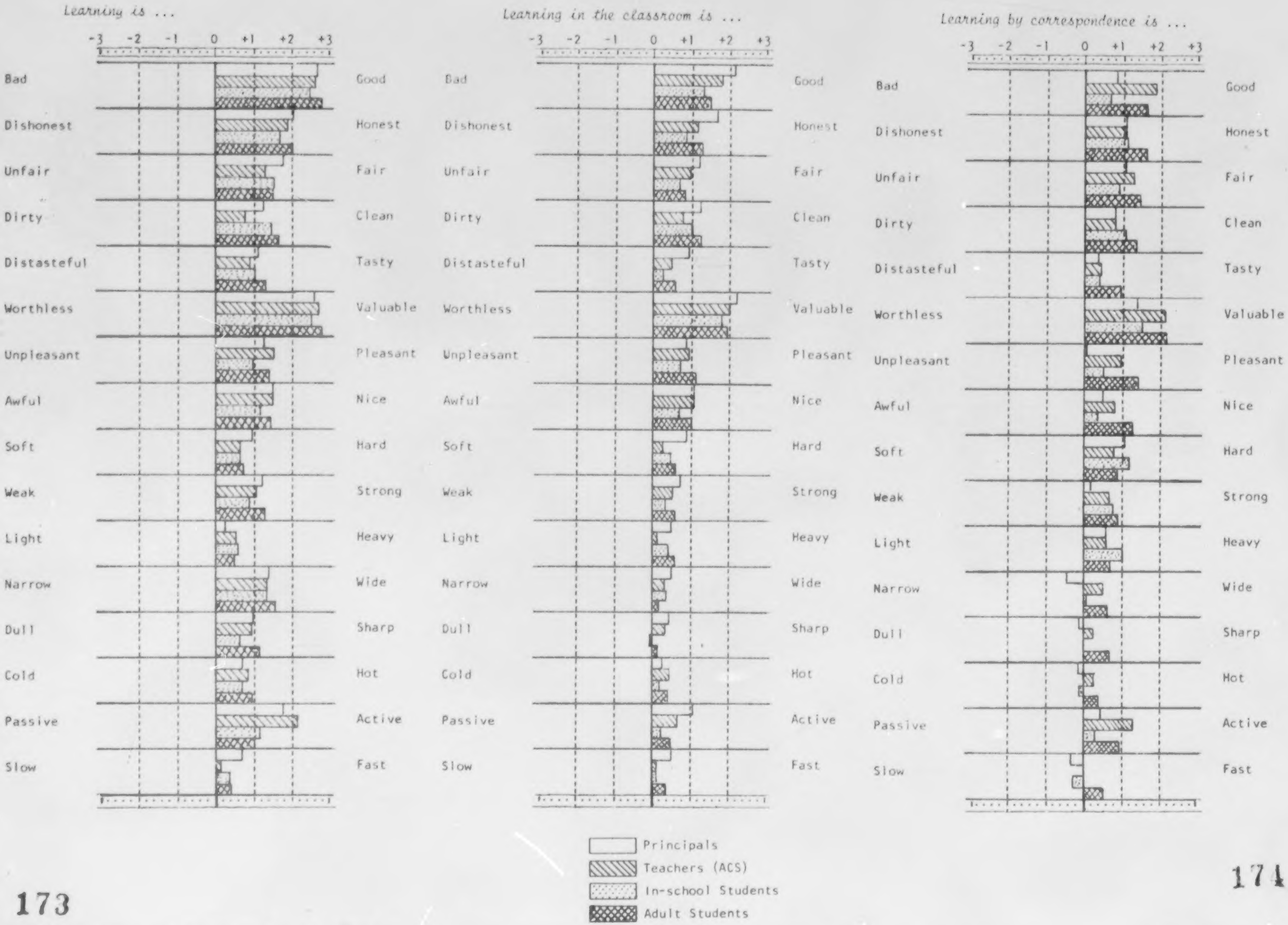
Learning is ...

Learning in the classroom is ...

Learning by correspondence is ...

Figure 23

Profile Of Attitudes for Principals, Teachers (ACS), In-school Students, and Adult Students



For each concept there were differences amoung the groups. Where these significant differences occurred are shown in Tables 38-40.

As well as significant differences among groups, significant differences were found in the same groups between different concepts. These differences are identified in Tables 41-43.

The major differences in attitudes towards classroom and correspondence learning are summarized in Table 44. There it can be seen that differences are most often perceived to be in the potency dimension--correspondence learning is regarded as hard, not soft; strong not weak; heavy, not light; and, wide, not narrow. The exception to the pattern occurs among principals who perceive classroom learning as being significantly more good, more active and more potent than correspondence learning.

Locus of Control

The study population was divided into three groups on the basis of scores obtained on the Internal-External Locus of Control Instrument--High ILC (scores were more than one deviation above the mean), Low ILC (scores were more than one deviation below the mean), and Medium ILC (included scores within plus or minus one deviation of the mean). Tables 45 to 52 show comparisons of attitude on the basis of locus of control scores.

The High ILC group regard learning, learning in the classroom, and learning by correspondence more positively than other groups (Tables 45-47). All groups regard both learning in the classroom and learning by correspondence as significantly less positive than it could be (Table 48-49). Learning by correspondence is regarded significantly more

Table 38

A Comparison of Attitude Scores Towards the Concept "Learning"

Group	Good	Active	Potent	Independent	Flexible	N
Total Population	1.73	0.92	0.93	0.09	1.14	355
Principals	1.81	1.04	0.97	0.21	0.74	39
Teachers (ACS)	1.68	1.03	0.89	0.12	0.97	69
Inschool Successful	1.84	0.93	0.90	0.18	1.44	50
Late Dropouts	1.56	0.70	0.86	0.19	1.40	37
Early Dropouts	1.70	0.73	0.94	-0.46	0.80	35
Nonstarters	1.13[1]	0.29[2]	0.64	-0.65	0.90	20
Adult Successful	1.91	1.26	1.16	0.19	1.38	47
Late Dropouts	2.01	1.00	1.10	0.00	1.04	26
Early Dropouts	1.68	0.90	0.85	0.80	1.95	20
Nonstarters	1.81	0.54	0.61	0.25	0.67	12
Male	1.67	0.81	0.91	-0.03	1.67	144
Female	1.78	0.99	0.94	0.16	1.20	210

---

1. Significantly lower than Adult Successful and Adult Late Dropouts, $p > .05$.
2. Significantly lower than Adult Successful, $p > .05$.

Table 39

A Comparison of Attitude Scores Towards the Concept "Learning in the Classroom"

Group	Good	Active	Potent	Independent	Flexible	N
Total Population	1.11	0.32	0.45	-0.76	-0.06	355
Principals	1.41	0.59	0.65	-0.85	0.49	39
Teachers (ACS)	1.17	0.42	0.31	-0.81	-0.09	69
Inschool Successful	1.02	0.11	0.27	-0.70	-0.02	50
Late Dropouts	0.93	0.33	0.47	-0.68	0.08	37
Early Dropouts	1.12	0.30	0.47	-0.77	-0.34	35
Nonstarters	0.34	-0.36	0.46	-1.10	-0.10	20
Adult Successful	1.41	0.68	0.52	-0.95	0.02	47
Late Dropouts	1.21	0.52	0.72	-0.23	0.08	26
Early Dropouts	1.04	-0.15	0.45	-0.70	-0.80	20
Nonstarters	0.68	-0.22	0.23	-0.67	-0.67	12
Male	1.09	0.27	0.48	-0.87	-0.08	144
Female	1.13	0.35	0.42	-0.70	-0.03	210

Table 40

A Comparison of Attitude Scores Towards the Concept "Learning by Correspondence"

Group	Good	Active	Potent	Independent	Flexible	N
Total Population	1.08	0.27	0.70	1.50	0.03	355
Principals	0.76[1]	0.01	0.36	0.49[9]	-1.10[11]	39
Teachers (ACS)	1.18	0.44	0.64	1.64	0.12	69
Inschool Successful	1.32[2]	0.42	0.71	1.82	0.02	50
Late Dropouts	0.70[3]	-0.32[7]	0.84	1.16	-0.57	37
Early Dropouts	0.48[4]	-0.17[8]	0.88	1.43	-0.37	35
Nonstarters	0.42[5]	-0.31	0.59	1.10	0.20	20
Adult Successful	1.64	0.83	0.80	2.17	0.64	47
Late Dropouts	1.60	0.61	0.71	1.50	0.54	26
Early Dropouts	1.27	0.67	0.95	1.90	1.00	20
Nonstarters	1.06	0.02	0.42	1.33	0.92	12
Male	0.94[6]	0.16	0.60	1.25[10]	-0.13[12]	144
Female	1.18	0.33	0.77	1.67	0.26	210

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1. Significantly lower than Adult Successful, p>.05.
2. Significantly higher than In-school Nonstarters, p>.05.
3. Significantly lower than Adult Successful, p.>05.
4. Significantly lower than In-School Successful, Adult Successful, Adult Late Dropouts, p> 05.
5. Significantly lower than Adult Successful, Adult Late Dropout, p>.05.
6. Significantly lower than Females, p>.05.
7. Significantly lower than Adult Successful, p>.05.
8. Significantly lower than Adult Successful, p>.05.
9. Significantly lower than Adult Successful, p>.05.
10. Significantly lower than Females, p>.05.
11. Significantly lower than Adult Successful, p>.05.
12. Significantly lower than Females, p>.05.

Table 41

A Comparison Within Groups of Attitudes Towards "Learning" and "Learning in the Classroom"

Group	N	Learning is... Mean	Learning is... S.D.	Learning in the Classroom is... Mean	Learning in the Classroom is... S.D.	t	p*
Total Population	355	22.46	10.96	11.09	15.10	11.47	>.001
Principals	39	23.41	8.88	15.87	11.35	3.23	>.01
Teachers (ACS)	69	22.24	10.29	11.40	12.35	5.56	>.001
Inschool Successful	50	23.64	8.34	8.90	15.77	5.78	>.001
Late Dropouts	37	20.32	10.43	10.02	11.77	3.93	>.01
Early Dropouts	35	20.57	11.31	10.94	17.18	2.73	>.01
NonStarters	20	12.95	16.00	1.95	16.98	2.05	.05
Adult Successful	47	26.53	9.73	15.10	16.13	4.12	>.001
Late Dropouts	26	25.46	9.98	14.46	16.82	2.81	>.02
Early Dropouts	20	23.20	12.75	8.00	17.95	3.01	>.01
NonStarters	12	20.00	15.61	4.08	16.76	2.31	>.05
Male	144	21.24	10.52	10.73	14.75	6.94	>.001
Female	210	23.29	11.25	11.38	15.41	9.02	>.001

*Two-tailed t-Test

Table 42

A Comparison Within Groups of Attitudes Towards "Learning" and "Learning by Correspondence"

Group	N	Learning is...		Learning by Correspondence is...		t	p*
		Mean	S.D.	Mean	S.D.		
Total Population	355	22.46	10.96	14.06	14.12	8.84	>.001
Principals	39	23.41	8.88	6.92	13.79	6.20	>.001
Teachers (ACS)	69	22.24	10.29	15.57	11.04	3.64	>.001
In-school Successful	50	23.64	8.34	16.86	12.49	3.16	>.01
Late Dropouts	37	20.32	10.43	8.30	10.95	4.77	>.001
Early Dropouts	35	20.57	11.31	7.74	15.20	3.95	>.001
Non-starters	20	12.95	16.00	5.75	15.43	1.41	nsd
Adults Successful	47	26.53	9.73	22.29	12.53	1.81	nsd
Late Dropouts	26	25.46	9.98	20.11	14.08	1.55	nsd
Early Dropouts	20	23.20	12.75	19.50	17.03	0.76	nsd
Non-starters	12	20.00	15.61	12.50	13.30	1.21	nsd
Male	144	21.24	10.52	11.47	12.91	7.02	>.001
Female	210	23.29	11.25	15.79	14.73	5.85	>.001

*Two-tailed t-Test

Table 43

A Comparison Within Groups of Attitudes Towards "Learning in the Classroom" and "Learning by Correspondence"

Group	N	Learning in the Classroom is... Mean	S.D.	Learning by Correspondence is... Mean	S.D.	t	p*
Total Population	355	11.09	15.10	14.06	14.12	2.70	>.01
Principals	39	15.87	11.35	6.92	13.79	3.09	>.01
Teachers (ACS)	69	11.40	12.35	15.57	11.04	2.08	>.05
In-school Successful	50	8.90	15.77	16.86	12.49	2.77	>.01
Late Dropouts	37	10.02	11.77	8.30	10.95	0.64	nsd
Early Dropouts	35	10.94	17.18	7.74	15.20	0.81	nsd
Non-starters	20	1.95	16.98	5.75	15.43	0.72	nsd
Adult Successful	47	15.10	16.13	22.29	12.53	2.39	.02
Late Dropouts	26	14.46	16.82	20.11	14.08	1.29	nsd
Early Dropouts	20	8.00	17.95	19.50	17.03	2.03	.05
Non-starters	12	4.08	16.76	12.50	13.30	1.31	nsd
Male	144	10.73	14.75	11.47	12.91	0.45	nsd
Female	210	11.38	15.41	15.79	14.73	2.99	>.01

*Two-tailed t-Test

Table 44

A Comparison of Attitudes Towards "Learning in the Classroom" and "Learning by Correspondence"

		Learning in the Classroom is...		Learning by Correspondence is...			
Group	N	Mean	S.D.	Mean	S.D.	t	p*
Total Population							
Good	355	8.86	8.58	8.67	8.13	0.30	nsd
Active	355	1.27	4.76	1.07	4.60	0.58	nsd
Potent	355	1.78	3.24	2.79	3.33	4.08	>.001
Principals							
Good	39	11.26	6.14	6.08	7.23	3.37	>.01
Active	39	2.36	3.38	0.03	4.34	2.62	>.02
Potent	39	2.62	2.35	1.44	2.76	2.01	>.05
Teachers (ACS)							
Good	69	9.36	6.20	9.48	5.38	0.12	nsd
Active	69	1.69	3.77	1.77	3.62	0.11	nsd
Potent	69	1.25	3.00	2.57	3.16	2.50	>.02
In-School Successful							
Good	50	8.12	8.84	10.52	7.27	1.47	nsd
Active	50	0.44	4.86	1.68	4.35	1.33	nsd
Potent	50	1.06	3.68	2.82	3.45	2.45	>.02
In-School Non-Starters							
Good	20	2.75	10.04	3.35	10.70	0.18	nsd
Active	20	-1.45	5.12	-1.25	4.20	0.13	nsd
Potent	20	1.85	3.92	2.35	4.84	0.35	nsd
Adult Successful							
Good	47	11.26	8.00	13.09	7.21	1.15	nsd
Active	47	2.72	4.99	3.21	3.72	0.53	nsd
Potent	47	2.06	3.31	3.19	3.00	1.71	nsd
Adult Non-Starters							
Good	12	5.42	9.90	8.50	7.27	0.83	nsd
Active	12	-0.92	5.26	0.08	2.94	0.55	nsd
Potent	12	0.92	2.43	1.67	4.03	0.53	nsd
Male							
Good	144	8.68	8.59	7.49	7.02	1.28	nsd
Active	144	1.08	4.15	0.65	4.47	0.84	nsd
Potent	144	1.91	3.18	2.38	3.41	1.20	nsd
Female							
Good	210	9.02	8.61	9.46	8.76	0.52	nsd
Active	210	1.40	5.16	1.35	4.70	0.10	nsd
Potent	210	1.69	3.29	3.06	3.27	4.26	>.001

* Two-tailed t Test.

Table 45

Attitudes Towards "Learning is" Compared on the Basis of Locus of Control Scores

Group	Good	Active	Potent	Independent	Flexible	N
High ILC	2.05[1]	1.21[2]	1.16[3]	0.02	1.32	47
Medium ILC	1.70	0.93	0.94	0.97	1.08	233
Low ILC	1.64	0.69	0.74	0.17	1.23	75

1. Significantly higher than Low ILC, $p>.05$.
2. Significantly higher than Low ILC, $p>.05$.
3. Significantly higher than Low ILC, $p>.05$.

Table 46

Attitudes Towards "Learning in the Classroom" Compared on the Basis of Locus of Control Scores

Group	Good	Active	Potent	Independent	Flexible	N
High ILC	1.73[1]	0.87[2]	0.66	-0.40	0.32	47
Medium ILC	1.01	0.27	0.43	-0.81	0.08	233
Low ILC	1.02	0.13	0.35	-0.84	-0.21	75

1. Significantly higher than Medium ILC and Low ILC, p.>.05.
2. Signficantly higher than Medium ILC and Low ILC, p.>.05.

Table 47

Attitudes Towards "Learning by Correspondence" Compared on the Basis of Locus of Control Scores

Group	Good	Active	Potent	Independent	Flexible	N
High ILC	1.47[1]	0.53	0.84	1.36	0.09	47
Medium ILC	0.99	0.17	0.66	1.45	-0.07	233
Low ILC	1.13	0.40	0.76	1.73	0.31	75

1. Significantly higher than Medium ILC, p.>05.

Table 48

A Comparison Within Groups of Attitudes
Towards "Learning" and "Learning in
the Classroom"

Group	N	Learning is... Mean	Learning is... S.D.	Learning in the Classroom is... Mean	Learning in the Classroom is... S.D.	t	p*
High ILC	47	27.26	9.65	19.87	11.08	3.41	>.01
Medium ILC	233	22.21	11.33	10.00	15.02	9.89	>.001
Low ILC	75	20.25	9.82	9.00	15.90	5.18	>.001

* Two-tailed t-Test.

Table 49

A Comparison Within Groups of Attitudes Towards "Learning" and "Learning by Correspondence"

Group	N	Learning is... Mean	Learning is... S.D.	Learning by Correspondence is... Mean	Learning by Correspondence is... S.D.	t	p*
High ILC	47	27.26	9.65	18.62	11.89	3.83	>.001
Medium ILC	233	22.21	11.33	12.61	14.18	8.06	>.001
Low ILC	75	20.25	9.82	15.72	14.70	2.20	>.05

* Two-tailed t-Test.

favorably than learning in the classroom by the Low ILC group (Table 50). All groups appear to perceive significantly greater independence in correspondence study than in the classroom (Table 51). The combined score (good, potent, active) for correspondence learning correlates significanly with group ILC scores for students (in-school and adult) (Table 52).

Preferred Learning Styles

Females perceive correspondence study to be significantly more flexible and independent than males (Table 40). They also have a more positive attitude toward correspondence study than classroom study (Table 43), particularly in the potency dimension (Table 44). Low ILCs have more positive attitudes towards correspondence study than towards classroom learning (Table 50).

The choices among alternate learning modes may also be an indication of preferred learning styles. For in-school students, 38 percent chose correspondence study over other available alternatives. The remaining 62 percent were forced to study by correspondence because required courses were not taught in their schools or because of schedule conflicts. For adult students, 79 percent chose correspondence study over other alternatives. The remaining 21 percent had no other alternatives (see Table 53).

Discussion

The reviewed literature suggested that significant differences in attitudes towards correspondence study existed. The findings of this study support that claim.

Figures 18-20 tell a great deal of the story, neither classroom

Table 50

A Comparison Within Groups of Attitudes Towards "Learning in the Classroom" and "Learning by Correspondence"

Group	N	Learning in the Classroom is... Mean	S.D.	Learning by Correspondence is... Mean	S.D.	t	p*
High ILC	47	19.87	11.08	18.62	11.89	0.52	nsd
Medium ILC	233	10.00	15.02	12.61	14.18	1.92	nsd
Low ILC	75	9.00	15.90	15.72	14.70	2.67	>.01

*Two-tailed t-Test

Table 51

A Comparison of Attitudes Towards "Learning in the Classroom" and "Learning by Correspondence"

Group and Dimension	N	Learning in the Classroom is... Mean	S.D.	Learning by Correspondence is... Mean	S.D.	t	p*
High ILC							
Good	47	13.81	5.86	11.72	5.51	1.76	nsd
Active	47	3.49	3.37	2.21	3.80	1.71	nsd
Potent	47	2.66	2.88	2.91	3.10	0.40	nsd
Independent	47	-0.40	1.84	1.36	1.79	4.65	>.001
Flexible	47	0.32	1.53	0.09	1.92	0.64	nsd
Medium ILC							
Good	233	8.09	5.86	7.94	8.22	0.23	nsd
Active	233	1.07	4.81	0.66	4.54	0.94	nsd
Potent	233	1.73	3.31	2.64	3.38	2.93	> .01
Independent	233	-0.81	1.52	1.49	1.82	14.52	>.001
Flexible	233	-0.08	1.71	-0.0[illegible]	1.93	0.06	nsd
Low ILC							
Good	75	8.15	9.63	9.03	8.84	0.58	nsd
Active	75	0.51	5.02	1.61	5.14	1.32	nsd
Potent	75	1.40	3.18	3.04	3.36	3.05	> .01
Independent	75	-0.76	1.66	1.73	1.73	8.93	>.001
Flexible	75	-0.21	1.74	0.31	2.09	1.64	nsd

*Two-tailed t Test.

Table 52

Correlations of Group ILC Scores With Dimensions of Learning and Learning Styles

		Learning is...			Learning in the Classroom is...			Learning by Correspondence is...		
oup	ILC Score	Σ[1]	Flex.	Ind.	Σ[1]	Flex.	Ind.	Σ[1]	Flex.	Ind.
3	12.74	23.64	1.44	0.18	8.9	-0.02	-0.70	16.86	0.02	1.82
4	12.84	20.32	1.41	0.19	10.03	0.09	-0.67	8.30	-0.57	1.16
5	12.29	20.57	0.80	-0.46	10.94	-0.34	-0.77	7.74	-0.37	1.43
6	12.55	12.95	0.90	-0.65	1.95	-0.10	-1.10	5.75	0.20	1.10
7	13.60	26.53	1.38	0.19	15.11	-0.02	-0.95	22.29	0.64	2.17
8	14.08	25.46	1.04	0.00	14.46	0.08	-0.23	20.11	0.54	1.50
9	12.90	23.20	1.95	0.80	8.00	-0.80	-0.70	19.50	1.00	1.90
10	13.17	20.00	0.67	0.25	4.08	-0.67	-0.67	12.50	0.92	1.33
X	13.02	21.58	1.20	0.06	9.18	-0.22	-0.72	14.13	0.30	1.55
r[2]	-	0.637	0.054	0.333	0.562	0.330	0.577	0.732*	0.524	0.342

[1] The sum of scores for Good, Active, and Potent

[2] Pearson Product-Moment Correlation index with ILC scores.

* Critical value of the correlation coefficient is 0.707 with df = (N-2) = 6

Table 53

Educational Alternatives Available to Students
Selecting Correspondence Courses

Course Availability	In-school Students	Percent of Total	Adult Students	Percent of Total
Days	21	14.8	11	10.5
Nights			8	7.6
Summer			1	1.0
Several of above	25	17.6	57	54.3
Other	8	5.6	6	5.7
Not Available	68	47.9	21	20.0
Schedule conflict	20	14.1	1	1.
TOTAL	142	100	105	100

learning nor correspondence learning are regarded as highly as is the general concept of learning. Stated another way, both forms of learning fall short of what it is believed they could be. Moreover, correspondence learning, and not classroom learning, comes closest to the ideal (see Table 37).

Adults regard all forms of learning positively. At the same time some in-school students found the stimulus concepts almost meaningless--attitudes were virtually non-existent. Principals displayed the most profound differences in attitudes among the concepts.

Attitudes have been assumed to be very closely related to motivations. If that is true then adult students probably are fairly highly motivated to learn. On the other hand, many in-school students find the concepts of learning to be so nearly meaningless they are probably very poorly motivated to learn. There is no reason to believe that adult students (average age 25.4 years) were not at one point in their life similar to the in-school sample (average age 17.1 years). If that is the case then attitudes towards learning shifted considerably over a period of time (roughly eight years), presumably because the maturing individuals saw the relevance of their educational experience in their own lives. On that basis it may be desirable to let those in-school students who have relatively poor attitude towards learning gain experiences in the world of work. Requirements for re-entry into the learning environment might be a measured attitude towards learning which exceeds a predetermined threshold.

Attitudes may also be linked to expectations. If that is the case, the relatively poor attitude of principals towards correspondence study could have a detrimental spillover effect on students within their schools who are taking part of their program by correspondence. This could be true even if the attitude was based on nothing more than the perception that the ACS is a competitor for their students.

Conclusions and Recommendations

Conclusions

Attitudes of the study population towards classroom learning and correspondence learning are not as high as they might be when compared to the general concept of learning.

The attitudes of the study population as a whole, ACS teachers, successful in-school students, successful adult students, adult early dropouts, and females towards correspondence study are significantly higher than their attitudes towards classroom learning.

The attitudes of principals towards correspondence learning are significantly lower than their attitudes towards classroom learning. There is some evidence that negative attitudes on the part of principals result from the decision to permit in-school students to register in correspondence study without their principal's signature.

It was difficult to discern preferred learning style among the survey respondents though high ILC scores tended to correlate significantly with positive attitudes towards correspondence learning.

The attitude profile (Figure 21-23) suggest that correspondence study is narrower, duller, colder, more passive, and slower than ideal learning forms. These profiles may be used to guide enhancement of the correspondence made of instruction.

Recommendations

It is recommended that:

1. Because attitudes are closely related to motivations, and motivations to achievement, serious consideration should be given to reshaping attitudes towards correspondence learning. Specific areas deserving attention are pinpointed in Figures 21 to 23.

2. Because classroom learning is perceived less positively than either correspondence study or learning as a general concept, serious consideration should be given to altering classroom learning experiences.

3. For those students who find the general concept of learning to be meaningless, or who hold a negative attitude, alternatives to schooling should be considered. One of these alternatives might be work experience outside the school context.

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STUDENT ACHIEVEMENT PATTERNS

Evidence revealed in the study of attitudes points to the conclusion that in at least some of the schools where students are enrolled in correspondence courses, principals have relatively negative attitudes towards correspondence study. This section examines some of the factors believed to have a bearing on student achievement. Though the available data prevented direct correlation of principals' attitudes with student achievement in correspondence study it was possible to summarize data by zones and by schools. The results offer some evidence that students studying by correspondence fare better in some schools than in others.

Sources of Data

Two sources of data were used in this part of the study: students records and observations by travelling teachers.

Findings

Students in schools account for 46.2 percent of the total ACS enrollments. These students come from 460 schools. School enrollment size versus course completion rates are shown in Table 54.

Table 55 shows patterns of enrollments and completion rates by course levels and zones. Excluding adults with a completion rate of 18.7 percent, completion rates vary from 39.7 percent (Zone 3) down to 23.3 percent (Calgary). The overall completion rate (including both those who successfully completed exams and those designated "completed our purposes") was 25.3 percent.

Table 56 identifies 42 schools with 4 or more enrollments and with completion rates more than one standard deviation above the mean.

Table 54

Completion Rates Versus School Enrollments

Number of Enrollments	Completion Rate Under 7%	Completion Rate (7%< and >$\bar{X}$+ 1 S.D.)	Completion Rate Over 56%	Total
1	78	-	16	94
2 - 10	41	32	11	84
11 - 20	5	42	10	57
21 - 30	3	34	12	49
31 - 40	1	48	3	52
41 - 50	-	29	3	32
51 - 60	-	22	3	25
61 - 70	-	19	1	20
71 - 80	-	8	1	9
81 - 90	-	11	1	12
91 - 100	-	6	-	6
101 - 110	-	7	-	7
Over - 110	-	12	1	13
Total	128	270	62	460

[1] Mean completion rate ($\bar{X}$) = 0.291, Standard Deviation (S.D.) = 0.269

Table 55

Patterns of Enrollments and Complet on Rates[1] for Course Levels and Zones

Jurisdiction	Grade 10 Courses	Grade 11 Courses	Grade 12 Courses	Adult Courses	Retro-Credit Courses	Elementry Courses	Junior High Courses	TOTAL
Zone 1	758 30.3	320 31.9	189 28.6	2 0.0	-	-	71 7.0	1340 29.2
Zone 2	1245 35.7	555 28.6	319 27.0	6 33.3	1 0.0	- -	99 23.3	2225 32.1
Zone 3	1078 41.4	437 32.0	221 38.0	5 40.0	2 0.0	- -	146 52.0	1889 39.7
Zone 4	993 35.8	411 33.3	254 31.5	2 0.0	- -	29 0.0	320 63.2	2009 38.6
Zone 5	643 36.1	326 27.0	231 34.6	3 0.0	- -	4 25.0	275 42.6	1482 35.0
Zone 6	635 31.7	326 26.4	177 35.6	1 100.0	- -	- -	309 65.7	1448 38.3
Edmonton	804 27.4	436 19.5	284 20.1	9 0.0	- -	2 50.0	27 7.4	1562 23.4
Calgary	472 26.1	190 21.6	133 16.5	1 0.0	- -	- -	13 15.4	809 23.3
Adults & Others	4858 23.0	2838 17.2	3273 17.2	2388 13.5	867 6.5	125 47.2	1320 24.8	15669 18.7
TOTAL	11486 29.3	5839 22.7	5081 21.5	2417 13.5	870 6.5	160 38.1	2580 37.1	28433 25.3

1. Completion Rate = $\frac{\text{COP + CWE PASS}}{\text{ENROLLMENT}}$

Table 56

Enrollment Patterns and Completion Rate for Schools
Where Correspondence Students are Successful

School I.D. No.	Grade 10	Grade 11	Grade 12	Elem.	Jr. High	Total Enrollment	Completion Rate %
1602	16	8	15	-	-	39	59.0
2008	63	19	6	-	-	88	56.8
2311	12	-	-	-	-	12	66.7
2605	13	5	7	-	-	25	68.0
3104	22	4	2	-	-	28	71.4
3401	28	9	6	-	-	43	56.0
3406	38	7	15	-	-	60	56.7
3502	33	5	5	-	-	43	56.0
3821E	-	-	-	-	44	44	97.7
3870	13	-	3	-	-	16	62.5
3902P	8	4	9	-	-	21	57.1
3904	26	2	2	-	-	30	63.3
3912E	-	-	-	-	30	30	56.7
4301	6	1	6	-	-	13	76.9
4402E	42	5	1	-	-	48	56.3
4408E	-	-	-	-	12	12	75.0
4503	13	2	4	-	-	19	57.9
4515E	-	-	-	-	16	16	87.5
4607E	-	-	-	-	116	116	78.4
4702	30	17	10	-	-	57	64.9
4804E	-	-	-	-	37	37	86.5
5103	4	2	15	-	-	21	71.4
5219E	-	-	-	-	27	27	92.6
5220E	-	-	-	-	6	6	83.3
5508	6	-	2	-	-	8	62.5
5513E	-	-	-	-	16	16	56.3
5602	9	3	9	-	-	21	61.9
5605	-	-	-	-	24	24	66.7
5691	33	16	16	-	-	65	63.1
5709P	-	-	-	-	26	26	57.7
5710E	-	-	-	-	5	5	80.0
5827	5	-	-	-	-	5	80.0
5901	8	2	-	-	-	10	80.0
5910	4	1	-	-	-	5	60.0
6315	-	-	-	-	32	32	75.0
6514	-	-	-	-	70	70	91.5
6519E	-	-	-	-	27	27	96.3
6704	1	-	-	-	12	13	69.2
6708	16	4	3	-	-	23	56.5
6711E	-	-	-	-	53	53	77.4
6803	7	4	4	-	-	15	66.7
6908	8	2	1	-	-	11	81.8
Total	464	122	141	-	553	1280	69.6%

E-Excellent Supervision
P-Poor Supervision

The average completion rate for the group was 69.6 percent. Table 57 identifies 24 schools with 4 or more enrollments and with completion rates one standard deviation or more below the mean. The remaining 394 schools had completion rates greater than 7 percent but less than 56 percent. The average was 29 percent and the standard deviation 26 percent. It may also be noted that the enrollment patterns by subject are similar for both the high and low achieving schools.

Schools where the travelling teachers found evidence that correspondence students were offered excellent supervision and assistance are indicated on Tables 56 and 57 by an "E" beside the school ID number. Poor supervision is identified with a "P".

Discussion

The evidence suggests that in most cases where students receive assistance and supervision in their correspondence study, completion rates increase. That students in rural areas had completion rates higher than those in Edmonton and Calgary may be a reflection of the fact that the rural schools are somewhat smaller and contact with staff somewhat easier. A third factor which may have a bearing on completion rates has to do with the number of students in a school using correspondence study. There was an observed high failure rate in those schools where there were fewer than 10 enrollments. In those cases where schools had only one enrollment in correspondence study, the failure rate rose to 83 percent.

Table 57

Enrollment Patterns and Completion Rate for Schools Where Correspondence Students are not Successful

School I.D. No.	Grade 10	Grade 11	Grade 12	Elem.	Jr. High	Total Enrollment	Completion Rate %
1470E	22	9	1	-	-	32	6.3
1792	4	-	-	-	-	4	0.0
1824P	-	-	-	-	21	21	0.0
1838	-	-	-	-	15	15	6.7
2804	4	-	2	-	-	6	0.0
4101	4	3	5	-	-	12	0.0
4190	-	-	-	12	-	12	0.0
4299E	5	-	4	-	-	9	0.0
4306	16	4	1	-	1	22	4.5
4317	-	-	-	-	7	7	0.0
4603	6	-	-	-	-	6	0.0
4803	4	2	-	-	-	6	0.0
5101	7	12	5	-	1	25	3.8
5205	5	4	1	-	-	10	0.0
5502	1	2	1	-	-	4	0.0
5601	5	-	-	-	-	5	0.0
6306	11	3	3	-	-	17	5.9
6712	-	-	-	-	5	5	0.0
6741E	-	-	-	-	4	4	0.0
6904	-	-	-	-	4	4	0.0
7057	4	1	-	-	-	5	0.0
7512	-	-	-	-	5	5	0.0
7906E	-	-	-	-	16	16	0.0
9902	2	3	3	-	-	8	0.0
Total	100	43	26	12	79	260	2.3%

E-Excellent Supervision
P-Poor Supervision

Conclusions and Recommendations

Conclusions

Though difficult to arrive at a firm conclusion, it appears that supervision and assistance to correspondence students have a direct and positive bearing on completion rates. This service to students may be more readily available in the smaller schools and schools in rural areas than in larger urban schools.

Recommendations

1. It is recommended that adequate student supervision be established either through visitation or in-school supervision.
2. In order to obtain principals' assistance in supervising in-school correspondence students, it may be necessary to reexamine the liaison which takes place between the ACS and schools.
3. Where direct supervision is impractical, close student follow-up and assistance either by phone or letter should be established.
4. Students should be routinely contacted when lesson submissions become irregular. As an example, students may be contacted if no lessons are received for one month.

INCENTIVES FOR STUDENTS

The low completion rates for correspondence study in general and at the ACS specifically (low in comparison to the completion rates in the regular school system) forces one to look for incentives that might encourage more students to complete their studies. This section is devoted to a search for suitable incentives and discussion of how they may be applied.

Findings

There is an abundance of literature dealing with motivation, satisfaction, and their relationships. Much of it is summarized in the following works.

Maslow (Sergiovanni and Starratt, 1971:131-136) describes a hierarchy of needs believed to motivate people. Only when the lower-order needs are satisfied will individuals be motivated by higher-order needs. Figure 24 portrays Maslow's hierarchy of needs.

Hertzberg (Sergiovanni and Carver, 1973:73) has identified a number of factors that appear to operate as "satisfiers" or "dis-satisfiers". Significant satisfiers include: achievement, recognition, work itself, responsibility, and advancement. The significant dissatisfiers are: policy and administration, supervision, salary, interpersonal relationships, and working conditions.

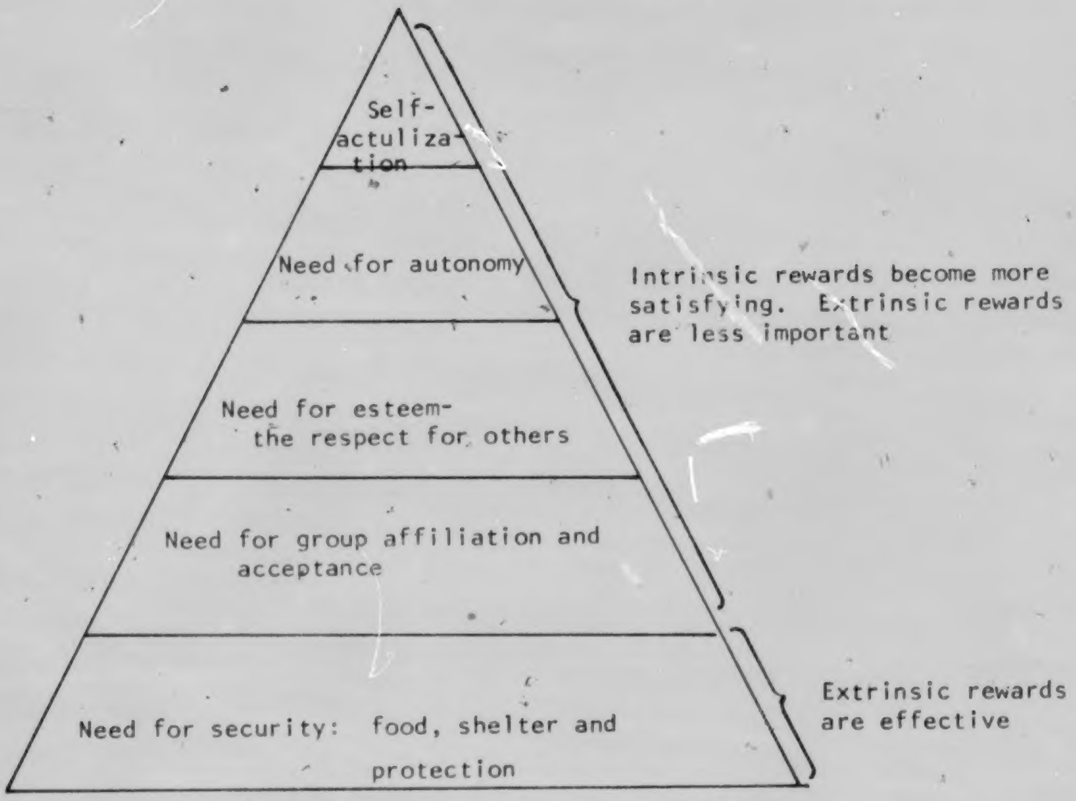
Some of the other literature focuses more specifically on learning.

Bauer (1975)noted that:

Demographic surveys (1973)... revealed that at the same time

Figure 24

Maslow's Hierarchy of Human Needs


Self-actuliza-tion
Need for autonomy
Need for esteem- the respect for others
Need for group affiliation and acceptance
Need for security: food, shelter and protection
Intrinsic rewards become more satisfying. Extrinsic rewards are less important
Extrinsic rewards are effective

that the proportion of adults attending formal school programs is increasing, the average duration of sustained effort is less than one year, and most students take a single course. Courses offering immediate practical rewards, such as vocational training, are chosen not less than ten times more frequently than courses promising less tangible benefits such as those in personal development, public affairs, and current events.

Wood (1975:70) describes a number of incentives in a social incentives instructional system for the US Air Force. The most attractive incentives (as seen by airmen) were: choice in base assignment, promotion, special passes, reduced squadron details, and extra instruction. Among the lest attractive incentives were certificates, letters of merit, and home town news releases.

Wyman (1975) reported a number of teaching strategies which institutionalized students found to be helpful to themselves. The following are statements that described these helpful teacher strategies:

Is more concerned about my ideas than whether I give the right answer.

Introduced new topics by telling us exactly what he wants us to do and how we are to go about doing it.

Asks us what we would like to do next.

Helps us learn by going over and over the same things til we get them right.

Suggests activities, but tries to let us choose which ones we would like to do.

Rewards us when we get things right.

Wants us to ask "Why" if we do not understand something.

Strategies which were not perceived by the students as being helpful to themselves included:

Grades based on "right or wrong" answers.

Emphasis on memorizing answers.

McLagan (1975) analyzed incentives or motivators incorporated into an industrially oriented reading program. She first pointed out that adult behavior often occurs without external (money, food, prizes) or social reinforcers and then outlines a plan for behavior change. The plan focuses on four areas: goals and plans, basic knowledge and skills necessary for successful performance, contributing environmental factors, and a reinforcement system.

Goals and plans force the student and teacher to look at what "is" and what "ought to be". Committment to goals becomes a strong motivating force when: the goals are seen as consistent with the demands of reality; are action-centered; are stated in terms of everyday activities; are associated with improved self-image; are concrete; are linked to progress reports; and, are signs of belonging to a more prestigious group.

Since basic knowledge and skills are essential for successful performance, these must be carefully assessed and remediated if necessary.

Students cannot be isolated from their environment. It is therefore essential that that environment be assessed in order to determine its effect on students. That effect may result from rewards, reinforcers, peer pressure, or other factors.

Reinforcers should generally be more intrinsic than extrinsic and the extrinsic (external rewards) should be drawn from the environment.

McLagan noted that not all individuals respond to intrinsic rewards, though those who score low on Rotters' (1966) locus of control scale (those with an external locus of control) tend to perform better when they receive external rewards. At the same time those with an internal locus of control respond best to intrinsic rewards.

Other evidence cited by McLagan (1975:7) suggests that:

> Imagined rewards and anticipation of rewards plays an important role in behavior change and development and could be more effective if learners know their value and more frequently self-administered imagined positive (and negative) consequences.

Discussion

There is not much evidence that the carrot-on-the-stick method motivates any but those who are at the lowest levels of the needs hierarchy described by Maslow. To them the carrot represents added security. Most of the other research aligns with Hertzberg's satisfiers and tend to be intrinsic.

The locus of control concept is discussed more fully on page 134.

McLagan presented a strong case in support of the argument that the strongest motivators are those goals that the student can identify with and which have reinforcers in the students' environment. Motivation occurs when the student makes a personal committment.

It must be noted that the majority of the ACS high-school and adult students tended to fall into the external locus of control group. They tended to perceive that their decisions were rooted in causes outside themselves. For that reason one cannot overlook McLagan's contention that external reward mechanisms may be useful.

It is possible to conceive of a fee structure designed in such a way that students would have all or most of the fee returned to them upon successful completion of their courses. Unsuccessful students would forfeit their fees.

For the system to work it would appear that the fees should represent an investment on the part of the student. A fee of $10.00 to $15.00 per course credit might be appropriate. Additionally, the teachers at the ACS would be expected to ensure that: students could clearly identify with the goals and plans mapped for them; students had the needed knowledge and skills for successful completion; and, appropriate environmental reinforcers were identified and included in the overall instructional strategy.

It may be argued that an increase in fees would deter some students and deprive others. It may also be argued that unless a student is prepared to invest in his goals, he is not likely motivated enough to achieve the goals. For some students for whom high fees would serve to deprive them of their education, alternate mechanisms could be established.

Conclusions and Recommendations

Conclusions

Evidence from a literature review suggests that most people are satisfied with feedback and reinforcement of an intrinsic nature--external rewards (carrots on sticks) for these individuals tend to be dissatisfiers.

Several studies were cited which identified reinforcers and strategies that might be expected to motivate correspondence students to higher levels of productivity.

The results of a survey of ACS students indicates that they exhibit an external locus of control. For those students with an external locus of control, the reviewed literature suggests external rewards may be effective.

An external reward system was suggested that could be incorporated into the fee structure at the ACS.

Recommendations

It is recommended that:

1. Counselling should be provided to students to the extent that they can see (and espouse) goals planned for them
2. A fee-refund strategy should be developed to encourage students to both invest in themselves and to pursue the investment.

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SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary of the Study

This study of The Alberta Correspondence School (ACS) was triggered late in 1975 by a number of economic factors. Among these were the imposition of the 11 percent budget guideline on increased expenditures in the 1976 fiscal year and the collective agreement between the Province and the ACS teachers which escalated wages at the ACS. Underlying these factors was a perceived need to examine the role of the ACS and the costs and benefits associated with that role.

The first stage of the study (conducted between November 1975 and February 1976) examined the immediate problems associated with the Summer Session program and offered recommendations for resolving the problems. The decision was made early in 1976 to continue the Summer Session program but to also encourage Winter Session students to complete their studies before the end of June. The Winter Session students were warned that the marking of their lessons would receive low priority during July and August: high priority would be given to lessons submitted by Summer Session registrants.

The effects on lesson flow of the foregoing decision coupled with the postal strike in the fall of 1975 made the 1975-76 school year at the ACS something of an anomaly.

The first step in Stage 2 of the study, which commenced in March, 1976, was a cost-benefit analysis of the ACS. This analysis lead to two conclusions: at high discount rates (approximately 8 percent and higher) the least costly alternative is high school education by correspondence and not education through the regular high school system; and, the cost-benefit model was sensitive to variations in student completion rates and instructional costs.

Because the ACS proved to be a viable educational alternative, particularly when high discount rates prevail, and because the cost-benefit model was sensitive to changes in student completion rates and reduced instructional costs, a number of specific studies were undertaken into these latter areas.

Three studies focused on the costs of correspondence instruction at the ACS: a study of instructional costs (particularly lesson marking costs); a study of course preparation, printing and distribution costs; and, an assessment of the feasibility of continued operation of an independent printing facility at the ACS.

The effectiveness and efficiency by which the ACS fulfills its role was examined by looking specifically at: certified staff utilization; student motivation and feedback; an analysis of the quality of the instructional program; an examination of prevailing attitudes towards correspondence study; student achievements patterns; and, incentives for students to complete their studies.

The findings for each study are presented in the separate sections of this report together with the ensuing conclusions and recommendations. In this section of the report these conclusions and recommendations are synthesized into more generalized conclusions and recommendations.

Specific Conclusions

Cost-Benefit Analysis

Neither regular instruction nor correspondence instruction yields a net social benefit at low discount rates. As discount rates are increased beyond 8 percent correspondence instruction, and not regular instruction, yields the lowest net social cost.

Further analysis proved that the cost-benefit model was sensitive to reduced costs of correspondence instruction and improved student completion rates.

Instructional Costs

Instructional costs per FTE pupil were found to be almost three times as high as instruction in the regular system. This was attributed to several causes.

1. Correspondence students have low rates of course completion.
2. High development costs in some courses accompanied by low enrollments make these courses expensive to offer.
3. Lesson marking (and hence course costs) vary markedly among courses.
4. Certified staff are required to perform many functions (other than development of instructional material, marking, and communicating with students) which could probably be performed by non-certified personnel.

Course Preparation, Printing and Distribution

A significant amount of certified and non-certified staff time was involved with proof-reading and revising textual material. No use was made of text-or word-processors as a means of resolving this problem.

Though no reductions in overall costs would result from a revised lesson distribution policy (an initial pack of 5 lessons followed by the remainder of the course upon successful completion of the first two lessons), better use of the printing facility could result.

Printing Facility

When compared to other alternatives (Central Duplicating or commerical firms) the printing facility demonstrated the lowest costs for all printing requirements.

The printing facility is operating in cramped quarters and cannot be readily expanded.

Certified Staff Utilization

The workload at the ACS fluctuates markedly during the year. Because personnel policies (particularly those pertaining to short-term contracts and contracted lesson marking) are constraining, the Director of the ACS is limited in the extent to which he can maintain efficient use of the staff over the year.

Student Motivation and Feedback

Though the consensus of opinion derived from a literature review suggested that correspondence students should have their lessons corrected and on the way back to them within 24 hours of receipt at the correspondence school, it was found that the ACS norm is closer to 3.5 days with many students experiencing considerably longer delays.

Delays were noted in the record-keeping section, in the marking processes, and in the mailroom. The longest delay appears to be in lesson marking. This may result from the fact that no use is made of pre-written responses to common student errors.

Neither was there evidence of any form of automated or electronic data handling in the record-keeping section. Beyond slowing the processing of students' lessons, the lack of data handling equipment virtually eliminates the possibility of any significant analysis of data pertaining to students or the instructional program.

Quality of the Instructional Program

When compared to other correspondence institutions in terms of completion rates, the ACS falls near the average. Wide variations around the average completion rate were noted and appeared to be related to student types (in-school and out-of-school), sex, course credit value, and the difficulty of first lessons in a course.

Indicators of course/lesson quality were developed and tested in an attempt to facilitate on-going curriculum evaluation at the ACS. Though these indicators appear to be functional, data collection procedures must be developed before the indicators can be applied in a meaningful fashion.

The amount of student work required to earn 5 credits in different courses varies widely. In spite of these variations in course workloads, from the students perspective, correspondence study is an attractive alternative because it demands less work per course, on the average, than does equivalent instruction in the regular school system.

Attitudes Towards Correspondence Study

When compared to the idealized concept of learning correspondence study, and not regular classroom study, was perceived to be the most attractive form of learning.

Attitudes towards correspondence learning were most positive for adult students and lease positive for principals (of schools where some students were enrolled in correspondence study) and non-achieving in-school correspondence students. The attitudes towards correspondence study held by ACS teachers clustered around the mean for all groups.

Attitudinal profiles, for the study groups examined, were developed for use in improving the image of correspondence study.

Student Achievement Patterns

On a school-by-school basis student completion rates varied from zero to 97.7 percent. Three factors may have a bearing on the completion rates of in-school students: the attitudes of school staffs towards correspondence study; the number of students enrolled in correspondence study in the school; and the amount of direct supervision provided to in-school correspondence students.

Incentives

Correspondence students may be motivated to complete their studies by providing more complete guidance at the time of registration, by levying a higher registration fee, and by providing a fee refund upon successful course completion.

General Conclusions

In a number of instances the Alberta Correspondence School was compared to the regular instructional system available in Alberta. On at least five counts the ACS appears to be the preferred alternative.

1. During periods when high discount rates prevail, correspondence instruction yields the lowest net social costs.
2. Correspondence students are better prepared for subsequent residence study than regular residence students.
3. The attitudes measured in the attitude survey indicates that correspondence study, and not classroom study, comes closest to the idealized concept of learning.
4. Correspondence study demands less time on the part of students than comparable regular instruction.
5. Because the costs of correspondence instruction may be further reduced through economies of scale and system analysis, correspondence instruction may be expected to become an even stronger competition when adopted on a wider base.

Student completion rates, though lower than desired, appeared to be influenced by a number of factors.

1. Completion rates tended to be poor for in-school students when enrollments in correspondence study in a school were limited to one or two students.
2. Failure to complete correspondence courses correlated significantly with difficult first lessons in courses.
3. Significant people in the correspondence instruction obtain--ACS

teachers and principals of schools where some students are enrolled in correspondence study--demonstrated more negative attitudes towards correspondence study than did some groups of students. It is believed that these negative attitudes, while they may be subject to changes, are unknowingly passed on to students.

4. Supervision of correspondence students appears to have a positive influence on completion rates.

The present lesson distribution policy of the ACS requires that all instructional materials for a course are to be mailed to each enrollee upon registration. Inasmuch as approximately 30 percent of the enrollees never submit the first lesson, much of the instructional material produced by the ACS is wasted. Because savings in paper and printing are offset by increased packaging and postage costs, a revised distribution is not justifiable on these grounds. However, by revising the policy so that an initial 5-lesson shipments is sent to enrollees followed by the remainder of the material upon successful completion of two lessons, the revised policy would reduce demands placed on the frequently overloaded printing facility. Moreover, the revised policy may lead to improved completion rates. It is believed that some students fail to make progress in correspondence courses because they are overwhelmed by the workload reflected by the total course. This is substantiated by the fact that average completion rates increased for courses of less than 5 credits.

Recommendations

Specific recommendations have been set forth at the end of each section of this study. Presented here are recommendations that flow from the more general conclusions.

It is recommended that:

1. The ACS should be maintained as an alternate form of education in Alberta.
2. The ACS should be afforded greater autonomy. Specifically: Policies which constrain efficient and flexible operation of the ACS should be examined and revised as necessary. Policies pertaining to staffing and accounting should be given first priority. Present staffing policies make it difficult to rapidly adjust to altered worklaods. The accounting policies constrain decisions to manage fees as a means of motivating students. Another policy worthy of examination is that of attempting to staff a 12-month operation with employees which work only a 10-month year.
3. Cost-reduction programs should be planned and instituted and mechanisms should be established to measure the effectiveness of these programs.
4. Programs to systematically improve instructional effectiveness should be instituted and mechanisms should be established to measure the effectiveness of these programs.
5. Automated or electronic data processing systems should be installed to:
   - facilitate preparation and/or revision of instructional material,
   - enable use of pre-written responses to common student errors in lessons,

- more efficiently maintain student records,
- systematically follow up on laggard students, and
- provide rapid retrieval and analysis of pertinent student and/or program data.

Recommendations for Further Study

The regular school system appears to be failing in a number of areas:

- it is not as cost-effective as correspondence study during periods when the discount rate hovers at or above 8 percent,
- attitudes towards classroom learning are less positive than those held towards correspondence learning, and
- classroom learning demands more of the students' time than does correspondence learning, and
- correspondence students are better prepared for subsequent residence study than are regular residence students.

For these reasons, a study into the effectiveness and efficiency of the regular school system appears to be justified.

The feasibility of using correspondence study as an alternative to regular instruction should be examined in the following cases:

- for remote schools and for regions with a highly transient population (in lieu of building schools), and
- in high-cost, low-enrollment courses wherever they are offered in the province.

A study should be conducted into the feasibility of integrating the ACS with other provincial educational delivery systems. Included might be Athabasca University, ACCESS, and/or educational or public service TV channels.

The feasibility of a regional correspondence school (i.e. western provinces) should be examined. Such an operation should lead to savings by virtue of economies of scale.

While this study has attempted to set forth appropriate recommendations, the feasibility of these recommendations and their implications should be carefully tested before steps are taken towards implementation.

APPENDIX 1

A COST-BENEFIT STUDY OF THE ALBERTA CORRESPONDENCE SCHOOL--
STAGE 1: SUMMER SESSION

planning and research

Staff Paper No. 2

A COST-BENEFIT STUDY OF THE ALBERTA CORRESPONDENCE SCHOOL

STAGE 1: SUMMER SESSION

February, 1976

Alberta
EDUCATION

A COST-BENEFIT STUDY OF THE ALBERTA CORRESPONDENCE SCHOOL -- STAGE I: SUMMER SESSION

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A COST - BENEFIT STUDY OF THE ALBERTA CORRESPONDENCE SCHOOL — STAGE I: SUMMER SESSION

OUTLINE OF THE STUDY

Purpose of the Study

Two factors have triggered the move toward examination of the Alberta Correspondence School (ACS) from a cost-benefit standpoint. First, the inclusion of a V-modifier clause in the teacher salary agreement has substantially increased the costs of offering a Summer Session program. Second, the government budget guidelines of 11% places the ACS in the position of having to cut costs, services, or both.

This two-stage study, when completed, will attempt to ascertain the optimum approach to keeping within government budget guidelines while retaining a maximum of services. The first stage of the study provides a preliminary examination of the Summer School program. The second stage (to be completed later this year) provides for a more complete cost-benefit analysis based on the entire 1975-76 school year.

Stage 1 has as its focus the Summer School program as it was implemented from 1 July to 30 August, 1975. Two areas have been examined in order to establish a basis for recommending alternative ways of implementing the Summer School program. These areas are:

- benefits derived and services offered by the Summer Session program of the school, and
- costs (primarily labor) assocated with the Summer Session program.

The Role of the Alberta Correspondence School

Since the Alberta Correspondence School is accredited, it follows the same goals of education as all other accredited schools in Alberta. These goals appear on pages 2-4 of the Junior-Senior High School Handbook.

The only difference between the Alberta Correspondence School and that of other publicly-supported schools in Alberta is the method of teaching: the correspondence method rather than the classroom method or group discussion method. Specific guidelines are as follows:

1. The main purpose of the Alberta Correspondence School is to prepare, publish and administer correspondence courses in the subjects of the basic education, Grades I to XII, and to supervise pupils who are pursuing these courses. The correspondence courses in basic education are revised and reissued as is found necessary because of changes in curriculum and the introduction of improved methods of presenting education by correspondence.

2. A second purpose of the school is to prepare courses primarily for adults provided that there is sufficient demand for such courses and provided that any such proposed course is not being offered through correspondence by any other publicly supported agency.[1]

Assumptions

The first stage of this study has been based on the following assumptions.

1. It is assumed that projections of future Summer Session program workloads based on past experience are valid.
2. It is assumed that lessons and tests are equivalent in terms of:
   - development and production costs,
   - work demands (hours of work per credit) placed on students, and
   - work demands (hours of marking time per lesson) on teachers.
3. It is assumed that functions of regular school teachers and ACS teachers are similar with differences occurring mainly in the methods of instruction. Because of this similarity the workload of regular school teachers may be used as a standard for assessing levels of performance of ACS teachers.

Limitations

The first stage of this cost-benefit study of the ACS is limited by several factors.

1. Time has prevented a complete analysis of the data which is accessible.
2. Because many of the costs associated with production and printing of instructional materials are spread over unequal periods of time and unequally sized units, it has not been possible to determine the total cost of instruction. Only labor costs incurred by certified staff have been considered in this study.

Delimitations

This study is delimited to an examination of the Summer Session program on the basis of:

- student records of achievement (lessons completed and tests passed), and
- teachers' workload as recorded on the "Instructors Weekly Work Report."

Neither support staff costs or utilization nor course development and printing costs have been considered in this stage of the study.

Definition

Enrollment. Enrollment means that a student has enrolled in a single course. A student enrolling in two courses would be counted as two enrollments.

Summer School program. A program offering students registering in May - July the opportunity to complete a course by August 31.

Summer Session. The period from 1 July to August 31 during which time teachers mark lessons and tests of both students continuing Winter Session courses and Summer School students.

Winter Session. The period from 1 September to 30 June of the following year.

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[1] Mrs. K.J. Doeling memo to W. Hathaway dated January 29, 1976.

STUDY DESIGN

Research Questions

Several research questions were posed at the outset of the study.

Benefits and Services

1. What is the composition of the Summer Session workload at the Alberta Correspondence School?
2. Who derives benefit from the special Summer School program?
3. What is the enrollment pattern for the Summer School program? What types of courses are selected and by whom?
4. What is the nature of student performance during Summer Session?
5. How does student performance in Summer School compare with student performance in Winter Session?

Costs

1. What are the costs associated with the Summer Session program?
2. What is the composition of the teachers' workload?

Data Sources

There were two sources of data used in this stage of the study:

1. The student record cards which contain information relating to students (i.e. location of student, courses being studies, number of lessons completed, marks, etc), and
2. The teachers' completed "Instructors Weekly Work Report" and associated weekly summaries.

Data Analysis

Data contained on student record cards were assembled and analyzed by computer. The data were manipulated on the basis of a number of variables:

- age,
- sex,
- location of students,
- grade level of students,
- subject level of courses,
- subject area of courses,
- lesson completions, and
- student workload (i.e. one course, two courses, three courses).

The weekly summaries of the "Instructors Weekly Work Report" for the months of July and August were used to develop estimates of an "average" week. A week most closely matching this "average" week was selected and the workload of each teacher (as reflected in the "Instructors Weekly Work Report") was analyzed to provide information regarding the percentage of time spent on various instructional and non-instructional activities.

FINDINGS OF THE STUDY

The findings of the study are reported in two sections (benefits and costs) and are reported as answers to the several research questions set forth earlier.

Benefits and Services

1. What is the composition of the Summer Session student workload at the Alberta Correspondence School?

Two distinct groups of people derived benefit from the ACS during the months of July and August 1975. The largest group (approximately 4,955 students) consisted of students continuing winter programs through the summer months. A smaller group (1,344 students) enrolled in Summer School courses. The distribution of course enrollments by level together with their respective lesson and test making volumes is shown in Table 1.

Several items in Table 1 merit discussion.

1. 43.9% of the summer teaching workload resulted from lessons/tests marked for students registered for Summer School courses.
2. 56.1% of the summer teaching workload resulted from lessons/tests marked for students continuing Winter Session programs through the summer months. Exams and tests accounted for 16.5% of the marking workload.
3. 42.5% of the expectations students held for Summer School study were apparently fulfilled — courses were passed, completed without tests, or students re-registered in the winter session in order to complete their work.
4. 63.9% of the winter students continuing their studies during the summer months passed the courses, completed them without tests, or re-registered in order to complete them.
5. An examination of Table 1 reveals that 47.8% of the winter students who are allowed to continue studies into the summer pass the courses. The effect of Summer Session on winter completion rates is shown in Table 2 where it may be noted that 34.8% of the courses counted as passed in the winter programs are actually the result of availability of a summer program

Table 1

1975 Summer Session Workload Summary

	Level of Instruction	Number of Courses	Enrollments			Lessons and Exams	
			Passed	Completed Our Purposes	Reregistered	Marked	Average Per Course
Summer School (1,344 students)	Junior High	152				1,820	11.97
	Grade 10	323	117	6	51	3,018	9.31
	Grade 11	614	192	7	97	4,574	7.47
	Grade 12 (Exam)	132	31	3	15	824	6.24
	Grade 12 (Non-exam)	328	87	2	50	2,096	6.39
	Column Total	1,549	427	18	213	12,332	7.97
Continuing Students (Approximately 4,955 students)	Elementary	32				146	4.56
	Junior High	239				1,731	7.24
	Grade 10	797	304	20	131	2,511	3.15
	Grade 11	1,261	667	11	183	3,886	3.08
	Grade 12 (Exam)	936	600	17	136	3,690	3.94
	Grade 12 (Non-exam)	2,185	1,033	92	287	3,813	1.75
	Column Total	5,450	2,604	140	737	15,777	2.89
	Summer Session Totals	6,999	3,031	158	950	28,109	4.02

Table 2

Effect of Summer Session

On Winter Completion Rate

	1974/75 Course Enrollment*	Courses Passed	Courses Completed Our Purpose (COP)	Attributed to Summer Session**	
				Courses Passed	Courses COP
Senior High	23,850	5,673	6,581	2,604	2,744
Junior High	2,227	1,311	1,311		
Elementary	948	492	492		
	27,025	7,476	8,384	2,604	2,744

Percentage of all courses passed in 1974/75	27.7%
Percentage of all courses passed during Summer Session	9.6%
Percentage of total passes attributed to Summer Session	34.8%
Percentage of all courses completed our purpose (COP) in 1974/75	31.0%
Percentage of all courses COP during Summer Session	10.2%
Percentage of total COP attributed to Summer Session	32.8%

* Based on Dr. Figures report to Dr. S. N. Odynak (pp. 108-109)

** Based on results of 1975 Summer Session Program

The implication of this factor appears to be that ten months (the traditional school year) may be inadequate for many students engaged in learning through correspondence study.

2. Who derives benefit from the Summer School program?

Table 3 summarizes characteristics of Summer School students. The typical Summer School student is:

- female,
- 16 to 18 years old,
- living in rural areas, and
- in grade eleven.

3. What is the enrollment pattern for the Summer School program? What types of courses are selected and by whom?

From Table 4 it may be seen that the majority of the courses are selected from the 1,000 series — grade 10 courses. The majority of Grade 11 students chose Grade 10 courses; the majority of Grade 12 students chose Grade 10 and 11 courses. This may imply that the Summer School program serves primarily a "catch-up" function.

Table 5 summarizes the distribution of enrollments by subject area, subject level, and sex. The most frequently selected courses are in the Math-Science area and followed by courses in the Business and Technical area and in the English and Social Sciences area. Detailed analyses of performance in each of the subject areas are contained in Appendix A.

4. What is the level of student performance in Summer School?

Tables 6 and 7 summarize student performance on first, or only. courses (Table 6) and second courses (Table 7) on the basis of age, sex, location, and grade level. Several factors are of interest:

- females are more successful in correspondence study than males,
- younger students are more successful than older students,
- urban students are least successful,
- grade 10 and 11 students have higher degrees of success than grade 12 students, and
- success rates drop when students attempt a second course during Summer School.

Table 3

Districtutions of 1203 High School Students
Enrolled in Summer School

		Male	Female	Row Total	Percent of Total Enrollment
Age	Under 16 Years	69	159	228	19.0
	16-18 Years	264	559	823	68.4
	Over 18 Years	72	80	152	12.6
Location	Rural	166	343	509	42.3
	Suburban	87	163	250	20.8
	Urban	144	256	400	33.3
	Non-resident	8	36	44	3.6
Grade Level	Grade 10	99	191	290	24.1
	Grade 11	157	378	535	44.5
	Grade 12	45	63	108	9.0
	Grade 12 (Non-exam)	104	166	270	22.4
Sex	Male	405		405	33.7
	Female		798	798	66.3

Table 4

Selection of Courses by Grades

		Course Level					
		1000 Series	2000 Series	3000 Series	Adult	Row Total	Percent of Total
Grade Level	Grade 12 (N=378)	144	130	186	---	460	32.9
	Grade 11 (N=535)	316	296	---	2	614	44.0
	Grade 10 (N-290)	323	---	---	---	323	23.1
	Column Total	783	426	186	2	1,397	100.0
	Percent of Total	56.0	30.5	13.4	0.1	100.0	

Table 5

Distribution of Enrollments by Subject Area, Course Level, and Sex of Students

			Course Level										
			1000 Series		2000 Series		3000 Series		Adult		Row Total		Percent of Total
			M	F	M	F	M	F	M	F	M	F	
Subject Area	English and Social Science	M	33		43		22				98		7.0
		F		42		91		45				178	12.7
	Mathematics and Science	M	103		73		43				219		15.7
		F		151		97		42				290	20.8
	Languages	M	8		5		4				17		1.2
		F		44		14		9				67	4.8
	Personal Development	M	56		13		1				70		5.0
		F		125		23		2				150	10.8
	Business and Technical	M	58		3		4				65		4.6
		F		164		64		13				241	17.3
	Adult	M											
		F								2		2	0.1
	Column Total	M	258		137		74				469		1,397
		F		526		289		113		2		928	
	Percent of Total		18.4	37.6	9.8	20.7	5.3	8.1		0.1	1,397		

Table 6

Student Performance on First, or Only, Courses

		Percent Incomplete		Percent Complete Our Purposes		Percent Complete (Passed)		Percent Complete (Failed)		Percent Reregister		Total	
		M	F	M	F	M	F	M	F	M	F	M	F
AGE	Under 16 Years	50.7	37.2	0.0	2.5	31.9	42.1	0.0	0.6	17.4	17.6	69	159
	16 - 18 Years	56.4	46.3	1.9	0.5	25.4	36.2	0.8	0.7	15.5	16.3	264	559
	Over 18 Years	75.0	60.0	0.0	1.3	13.9	22.4	0.0	1.3	11.1	15.0	72	80
LOCATION	Rural	54.8	39.3	0.6	1.5	24.1	39.1	0.6	0.5	19.9	19.6	166	343
	Suburban	60.9	42.3	0.0	0.6	27.6	38.7	0.0	1.2	11.5	17.2	87	163
	Urban	63.2	57.4	2.8	0.0	21.5	30.5	0.7	0.8	11.8	11.3	144	256
	Non-resident	37.5	41.7	0.0	5.6	50.0	33.3	0.0	0.0	12.5	19.4	8	36
GRADE LEVEL	Grade 10	53.5	38.2	1.0	1.6	29.3	41.4	1.0	1.6	15.2	17.2	99	191
	Grade 11	60.5	45.0	1.3	1.0	22.3	37.6	0.0	0.5	15.9	15.9	157	378
	Grade 12 (Exam)	62.2	57.1	4.4	0.0	26.7	23.9	0.0	0.0	6.7	19.0	45	63
	Grade 12 (Non-exam)	59.6	52.4	0.0	0.6	22.1	30.7	1.0	0.6	17.3	15.7	104	166
	Percent of Total (Segregated)	58.7	45.9	1.2	1.0	24.4	36.0	0.5	0.7	15.2	16.4	405	798
	Percent of Total (Combined)	50.2		1.1		32.0		0.7		16.0		1203	

Table 7

Student Performance on Second Courses

		Percent Incomplete		Percent Complete Our Purposes		Percent Complete (Passed)		Percent Complete (Failed)		Percent Reregister		Total	
		M	F	M	F	M	F	M	F	M	F	M	F
AGE	Under 16 Years	72.7	50.0	0.0	0.0	27.3	22.7	0.0	4.6	0.0	22.7	11	22
	16 - 18 Years	63.6	64.3	9.1	1.2	15.2	25.0	0.0	0.0	12.1	9.5	33	84
	Over 18 Years	84.2	60.9	0.0	4.3	10.5	17.4	0.0	4.3	5.3	13.1	19	23
LOCATION	Rural	54.1	54.3	4.2	0.0	25.0	23.9	0.0	2.2	16.7	19.6	24	46
	Suburban	100.0	50.0	0.0	3.1	0.0	31.3	0.0	0.0	0.0	15.6	7	32
	Urban	77.4	72.1	6.5	0.0	12.9	20.9	0.0	2.3	3.2	4.7	31	43
	Non-resident	0.0	87.5	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0	8
GRADE LEVEL	Grade 10	62.5	55.5	6.3	5.6	25.0	27.8	0.0	0.0	6.2	11.1	16	18
	Grade 11	68.7	59.7	6.3	0.0	12.5	21.0	0.0	3.2	12.5	16.1	16	62
	Grade 12 (Exam)	76.9	80.0	7.7	0.0	15.4	20.0	0.0	0.0	0.0	0.0	13	10
	Grade 12 (Non-exam)	77.8	61.5	0.0	2.5	11.1	25.7	0.0	0.0	11.1	10.3	18	39
	Percent of Total (Segregated)	71.5	61.2	4.7	1.6	15.9	23.2	0.0	1.6	7.9	12.4	63	129
	Percent of Total (Combined)	64.6		2.6		20.9		1.0		10.9		192	

Detailed analysis of student performance in each of the specific subject areas is presented in Appendix A.

5. *How does student performance in Summer School compare with student performance in Winter Session?*

The rate of successful course completion of the 1974-75 year for all highschool students was 27.7% (see Table 2). For the 1975 Summer School the rate was 31.9% — a 15.2% increase over the 1974-75 completion rate (445 courses COP out of 1397).

Summary

The Summer Session offered during July and August 1975 benefited over 6,000 students. Winter students continuing through the summer account for approximately 56% of the total workload of the certified staff of the school. Summer School students account for nearly 44% of the workload.

The Summer School enrollments represented a broad cross section of high school students. While the overall completion rate of courses at the Correspondence School is generally low the performance of Summer School students exceeds that of the 1974-75 winter students by 15.2%.

Equally important, the Summer Session enabled winter session students to complete 2,744 courses, approximately 10.2% of the total enrollments attributed to winter session. As such they account for approximately 32.7% of all course completions. In other words, without the availability of the Summer Session, Winter Session completion rates would drop from 31.0% to approximately 20.9%.

Costs

1. *What is the nature of the teachers' workload at the Alberta Correspondence School?*

During July and August of 1975 average utilization of certified staff was 71.3 man-months/month. An analysis of a typical weekly set of "Instructors Weekly Work Report" yielded the following division of time:

- 1.6% clerical duties,
- 1.2% professional development,
- 15.1% course development, and
- 82.1% devoted to marking and marking-related activities (marking; supervision; letters, records, keys).

The marking and marking-related activities which required 82.1% of the available teacher time are detailed in Table 8.

The Summer School marking-related workloads amounts to 7.97 lessons/tests per courses.

The Winter Session continuation marking-related workload amounts to 289 lessons/tests per course.

2. What are the costs associated with the Summer Session program?

Owing to the limitations and delimitations of this study, the costs can only be assessed on the basis of wages for certified staff. The costs of various staffing alternatives, including retention of the status quo, are discussed further in the section devoted to alternatives.

Table 8

Teachers' workload survey

	Course Enrollments	Lessons Marked	Tests Marked	Raw Total	Percent of Total
Summer School	1549	11,901	431	12,332	43.9
Winter Session	5450	13,173	2604	15,777	56.1
Column Total	6999	25,074	3035	28,109	
Percent of Total		89.2	10.8	100.0	

CONCLUSIONS AND RECOMMENDATIONS

More than one-half (56.1%) of the total marking workload of the Summer Session is attributable to the 20.2% of the winter students (4,955 students) who continue through the summer. Of these students 47.8% successfully completed their courses. This is nearly double the completion rate for winter students. This finding tends to justify the conclusion that a ten-month school year is inappropriate for many correspondence students.

Recommendation 1. The Alberta Correspondence School should be organized to operate on a continuous basis.

The Summer School program provides benefits to a wide range of high school students. Moreover, Summer School completion rates are higher than during the regular year.

Recommendation 2. Students should be allowed to continue registering for courses to be completed during July and August.

The completion rates for correspondence students is much lower than for students in regular school programs. At the same time, the school is ideally suited to extensive application of systems analysis and quality control procedures which may be designed to bring this problem into clearer focus and to provide insights into solutions.

Recommendation 3. Systems analysis and quality control procedures should be implemented in order to improve, and optimize; student completion rates, the curriculum, and the operation of the school.

ALTERNATIVES

Staffing Levels

For Summer School students, the average number of marking units (lesson plus exams) per course was 7.97. For Winter Session students who continued into Summer Session, the number of marking units per course was 2.89. Since there were 18,473 students registered in Winter Session courses, each Winter Session registration represents .85 of a marking unit which will be marked in the summer months. If the 1975-76 Winter Session enrollment is approximately 17,840 (based on the last 5 years), then approximately 15,130 marking units will have to be handled during the summer. In addition, a Summer School enrollment of 1,250 (has been dropping approximately 8% per year) implies another 11,390 marking units, totally 26,520. This, in turn, implies a need for 67.3 professional staff on duty during the Summer Session if services, and productivity, are to remain unchanged.

One standard against which the productivity of teachers can be measured would be the productivity of teachers in the regular school system. If one assumes that a high school teacher, on the average, teaches a class of twenty students[1], seven out of eight periods per year, this is the equivilent of 140 students/year.

If each student represents five credits a year, and if one credit translates as four lessons at the correspondence school, then each teacher handles the equivilent of 2,800 lessons in a ten-month period, or 280 lessons per month. Using this productivity standard, the correspondence school would require 47.4 full-time professional staff to handle the Summer Session workload.

When compared to this standard, teachers in the Alberta Correspondence School are presently working at approximately 70% of the productivity of teachers in the regular school system.

Staffing Methods

The remainder of this section is based on "no change" in the productivity of ACS teachers. However, there are several ways in which services could be offered:

Alternate 1	No change in activities.
Alternate 2	Omit all non-marking related activities (developmental work, clerical etc., (consumes 17.9% of the teachers' time).
Alternate 3	Omit all Summer School courses (retain 56.2% of total staff).
Alternate 4	Omit all Summer School courses plus all non-marking related activities.
Alternate 5	Omit all courses continued from Winter Session (retain 43.8% of total staff).
Alternate 6	Omit all winter session continuations plus all non-marking related activities.

Once staff levels are determined for each of the above alternatives, there are several methods which could be used to allocate staff (if is assumed that teachers receiving V-modifier would not take their 3 week holiday during the summer). Given the total number of staff required holiday periods can be distributed in an infinity of ways. For simplicity, only three methods are considered:

Method 1	All required staff covered on V-modifier; all non-required staff take holidays in July and August.
Method 2	Half of required staff on V-modifier, half take holidays in September and October; all non-required staff take holidays in July and August.
Method 3	None of required staff on V-modifier, all take holidays in July and August.

Table 9 summarized these findings (assumes a total professional staff of 90)

Table 9

	No. of professional staff required	METHOD 1			METHOD 2			METHOD 3		
		No. of staff on V-Modifier	No. of staff off Sept.-Oct.	No. of staff off July-Aug.	No. of staff on V-Modifier	No. of staff off Sept.-Oct.	No. of staff off July-Aug.	No. of staff on V-Modifier	No. of staff off Sept.Oct.	No. of staff off July-Aug.
Alt. 1	67.3	67.3[1]	0	22.7	33.7	33.8	22.7	0	67.3	22.7
Alt. 2	55.3	55.3[2]	0	34.7	27.7[6]	27.8	34.7	0	55.3	34.7
Alt. 3	37.8	37.8	0	52.2	18.9[8]	18.9	52.2	0	37.8	52.2
Alt. 4	31.0	31.0[4]	0	59.0	15.5[9]	15.5	59.0	0	31.0	59.0
Alt. 5	29.5	29.5[5]	0	60.5	14.7[10]	14.8	60.5	0[12]	29.5	60.5
Alt. 6	24.2	24.2[7]	0	65.8	12.1[11]	12.1	65.8	0[13]	24.2	65.8

---

[1] All superscripts show rank order by decreasing cost

If we assume that it is desirable to have no more than one-third of the staff on holidays during September and October, infeasible alternatives are those circled on Table 9.

Dr. Figur indicates that "it would cost an approximate additional $140,000 per year to apply the V-modifier to the entire teaching staff".[2] This approximates $1,555 per teacher. In order of decreasing additional cost, the rank order of feasible alternatives is outlined in Table 10.

In selecting the optimum alternative, several things must be considered:

1. Few teachers have expressed a willingness to take holidays in September and October.[2]
2. Since up to one-third of the total staff may be on holidays during September and October, the remaining staff may be overloaded and/or prevented from doing any developmental work during those months.
3. Of the Winter Session students who continue into the summer, a full 50% complete the course. This represents 32.7% of all completions. If these students were not allowed to complete their courses, the yearly completion rate would fall to 20.9% from approximately 31.0%.

If one assumes that only certain segments of Summer School are to be dropped, then different alternatives come into play. In summary in Table 11, are the number of full time equivalent teachers required for certain segments of the program, and the corresponding costs if they were all on V-modifier.

It becomes apparent that, prior to any staffing alternative(s) being recommended, a policy decision regarding the necessity of various types of service must be made. Following this policy decision, by using Table 11, the minimum number of teachers required can be determined. These numbers represent minima due to the relative indivisibility of teachers (one cannot usually hire .9 of a teacher). Also, the problem of subject specialization in high school will no doubt necessitate some small number of additional staff.

Table 10

Rank #	No. Of staff required (1)	No. on V-mod. (2)	No. Off in July-Aug. (3)	N. Off in Sept.-Oct. (4)	Add. Cost (2) x $1,555. (5)	Is S.S. Offered	Is Winter cont. Allowed	Are Teachers doing Dev. Work
1	67.3	67.3	22.7	0	104,651	Yes	Yes	Yes
2	55.3	55.3	34.7	0	85,992	Yes	Yes	No
3	37.8	37.8	52.2	0	58,779	No	Yes	Yes
4	31.0	31.0	59.0	0	48,205	No	Yes	No
5	29.5	29.5	60.5	0	45,873	Yes	No	Yes
6	55.3	27.7	34.7	27.8	43,074	Yes	Yes	No
7	24.3	24.3	65.7	0	37,787	Yes	No	No
8	37.8	18.9	52.2	18.9	29,389	No	Yes	Yes
9	31.0	15.5	59.0	15.5	24,102	No	Yes	No
10	29.5	14.7	60.5	14.8	22,858	Yes	No	Yes
11	24.2	12.1	65.8	12.1	18,816	Yes	No	No
12	29.5	0	60.5	29.5	0	No	Yes	No
13	24.2	0	65.8	24.2	0	Yes	No	Yes

Table 11

Marking	No. of Teachers	$
Junior High S.S.	3.6	5,598.
Grade 10 S.S.	5.9	9,175.
Grade 11 S.S.	9.0	13,995.
Grade 12 (exam) S.S.	1.6	2,488.
Grade 12 (non-exam) S.S.	4.2	6,531.
Total Summer School	24.3	37,787.
Elementary Cont.	0.3	467.
Junior High Cont.	3.4	5,287.
Grade 10 Cont.	5.0	7,775.
Grade 11 Cont.	7.6	11,818.
Grade 12 (exam) Cont.	7.2	11,196.
Grade 12 (non-exam) Cont.	7.5	11,662.
Total Continuing Studies	31.0	48,205.
Total Marking	55.3	85,991.
Curriculum Development	12.0	18,660.
Overall Total	67.3	104,651.

Given the number of staff required, the additional cost to the Correspondence School can be determined by deciding on the holiday periods needed and by minimizing the number of teachers on the V-modifier.

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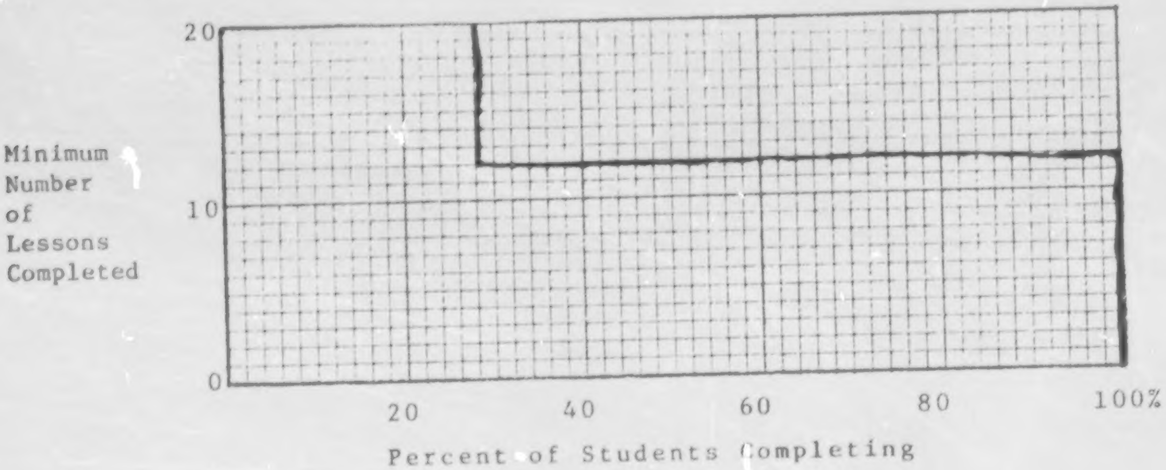
[1] 1974 Provincial Pupil/Teacher ratio is reported in S.B.O.A. School Finance Study.

[2] Memorandum, from Dr. Figur to Dr. Odynak, January 7, 1976.

The following tables and charts break down the totals given in earlier sections of the report. Although the tables are self-explanatory, the charts need further explanation. Each chart is a cumulative distribution. That is, the values show the percentage of students who complete the chosen number of lessons. An example would be (from the All Subjects - All grades chart): At least 3 lessons are completed by 46.7% of the boys, and 61.5% of the girls. Conversely, 50% of the boys complete at least 2 lessons; 50% of the girls complete at least 6 lessons.

Long horizontal surfaces represent the point (in terms of lessons) at which a relatively large number of students dropped out. Long vertical surfaces represent no drop-outs. Accordingly, a "perfect" representation would be as follows:



This represents a case in which 72% of the total enrollment completed the course for 3 credits, and 28% completed the course for 5 credits.

The slope (steepness) of the graph is a measure of the "stick-to-it-iveness" of the students.

APPENDIX A

Subject Area Profiles

1. Language Arts and Social Sciences - Grade 10 .... A1
2. Maths and Sciences - Grade 10 .... A2
3. Second Languages - Grade 10 .... A3
4. Fine Arts and Personal Development - Grade 10 .... A4
5. Business-Vocational-Technical - Grade 10 .... A5
6. All Subjects (Summary)-Grade 10 .... A6
7. Language Arts and Social Sciences - Grade 11 .... A7
8. Maths and Sciences - Grade 11 .... A8
9. Second Languages - Grade 11 .... A9
10. Fine Arts and Personal Development - Grade 11 .... A10
11. Business-Vocational-Technical - Grade 11 .... A11
12. All Subjects (Summary) - Grade 11 .... A12
13. Language Arts and Social Sciences - Grade 12 .... A13
14. Maths and Sciences - Grade 12 .... A14
15. Second Languages - Grade 12 .... A15
16. Fine Arts and Personal Development - Grade 12 .... A16
17. Business-Vocational-Technical - Grade 12 .... A17
18. All Subjects (Summary) - Grade 12 .... A18
19. Language Arts and Social Sciences - All Grades A19
20. Maths and Sciences - All Grades A20
21. Second Languages - All Grades A21
22. Fine Arts and Personal Development - All Grades A22
23. Business-Vocational-Technical - All Grades A23
24. All Subjects (Summary) - All Grades A24

Subject Area: Language Arts and Social Sciences Level: 1100's
Grade 10

SUBJECT AREA PROFILE

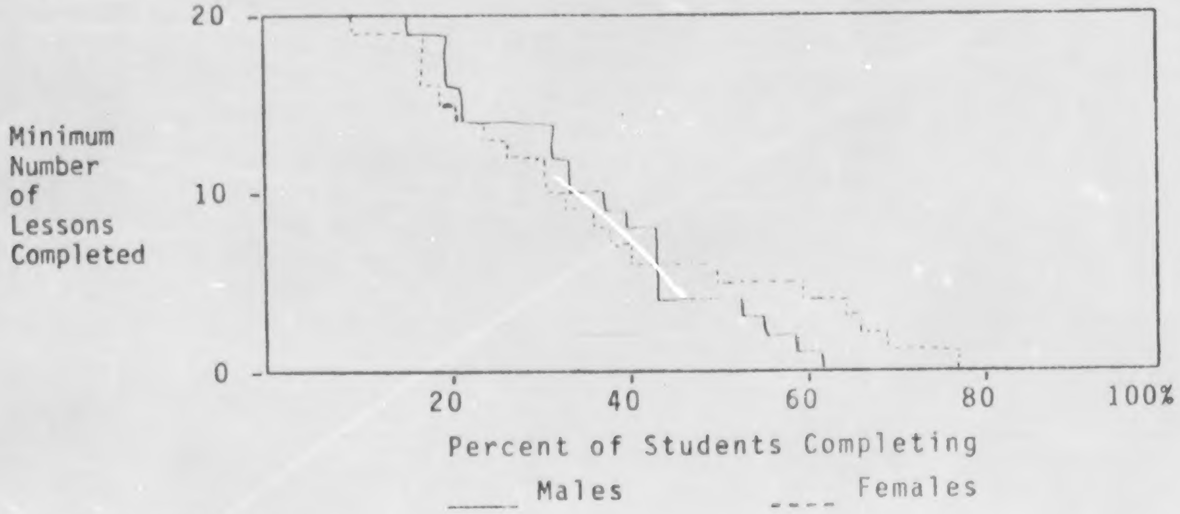


TABLE OF CONTENTS

	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	36	4	0	40
Completed Our Purposes (COP)	0	0	0	0
Completed (Exam Passed)	18	0	0	18
Completed (Exam Failed)	0	0	0	0
Reregistered	16	1	0	17
Total	70	5	0	75

SUMMARY

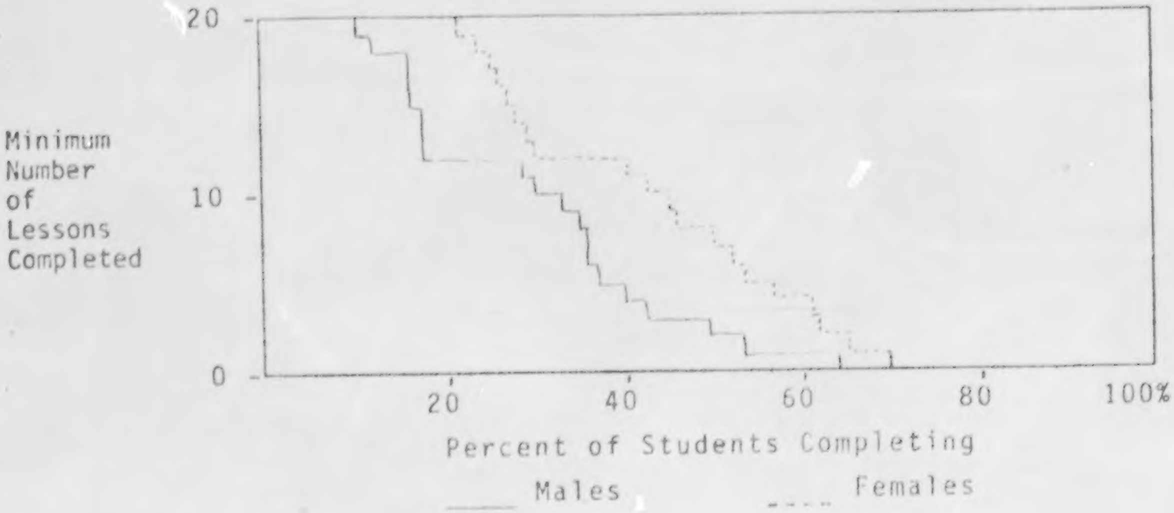
	Male	Female	Total
Total Lessons Completed	239	313	552
Total Course Registration	33	42	75
Average Number of Lessons Completed Per Course	7.24	7.45	7.36
Average Number of Marking Units Per Course*	N.A.	N.A.	7.60
Course Completion Rate**	N.A.	N.A.	24%

* Includes lessons and tests.
** Includes COP and Completed (Exam Passed)

Subject Area: Maths and Sciences

Level: 1200's
Grade 10

SUBJECT AREA PROFILE



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	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	118	14	0	132
Completed Our Purposes (COP)	2	2	0	4
Completed (Exam Passed)	77	5	0	82
Completed (Exam Failed)	3	0	0	3
Reregistered	29	4	0	33
Total	229	25	0	254

SUMMARY

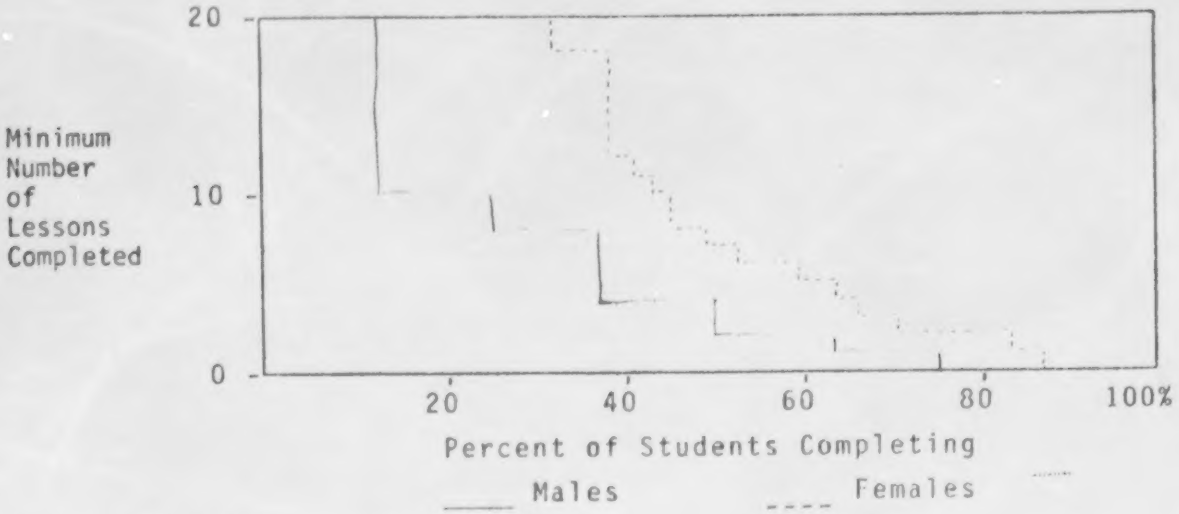
	Male	Female	Total
Total Lessons Completed	650	1326	1976
Total Course Registration	103	151	254
Average Number of Lessons Completed Per Course	6.31	8.78	7.76
Average Number of Marking Units Per Course*	N.A.	N.A.	7.93
Course Completion Rate**	N.A.	N.A.	33.9%

* Includes lessons and tests.
** Includes COP and Completed (Exam Passed)

Subject Area: Second Languages

Level: 1300's
Grade 10

SUBJECT AREA PROFILE



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	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	25	1	0	26
Completed Our Purposes (COP)	1	0	0	1
Completed (Exam Passed)	13	2	0	15
Completed (Exam Failed)	1	1	0	2
Reregistered	7	1	0	8
Total	47	5	0	52

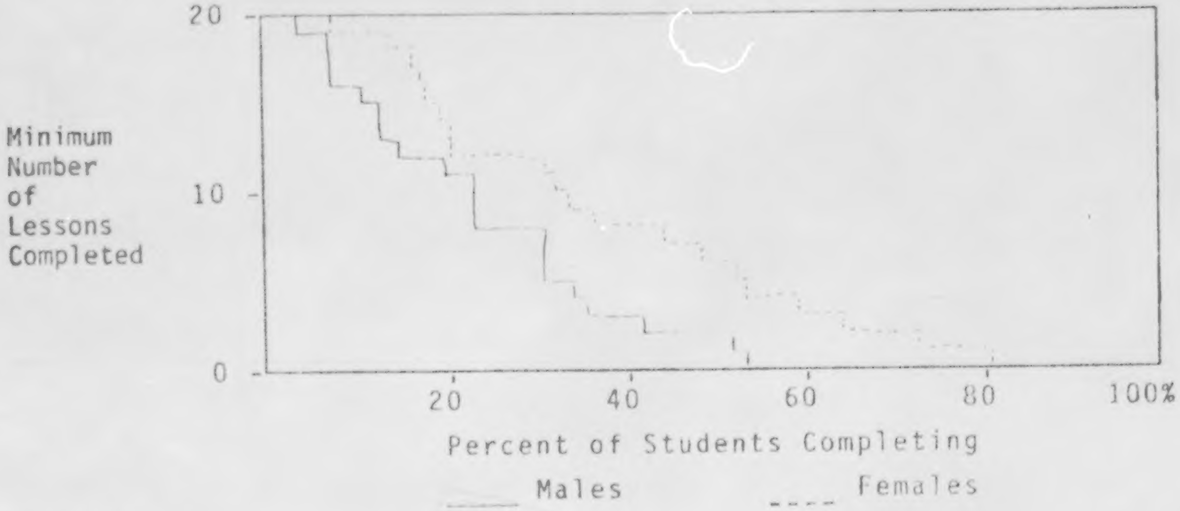
SUMMARY

	Male	Female	Total
Total Lessons Completed	45	436	481
Total Course Registration	8	44	52
Average Number of Lessons Completed Per Course	5.63	9.91	9.25
Average Number of Marking Units Per Course*	N.A.	N.A.	9.58
Course Completion Rate**	N.A.	N.A.	30.8

* Includes lessons and tests.
** Includes COP and Completed (Exam Passed)

Subject Area: Fine Arts & Personel Development Level: 1400's
Grade 10

SUBJECT AREA PROFILE



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	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	80	8	0	88
Completed Our Purposes (COP)	4	0	0	4
Completed (Exam Passed)	51	2	0	53
Completed (Exam Failed)	1	0	0	1
Reregistered	35	0	0	35
Total	171	10	0	181

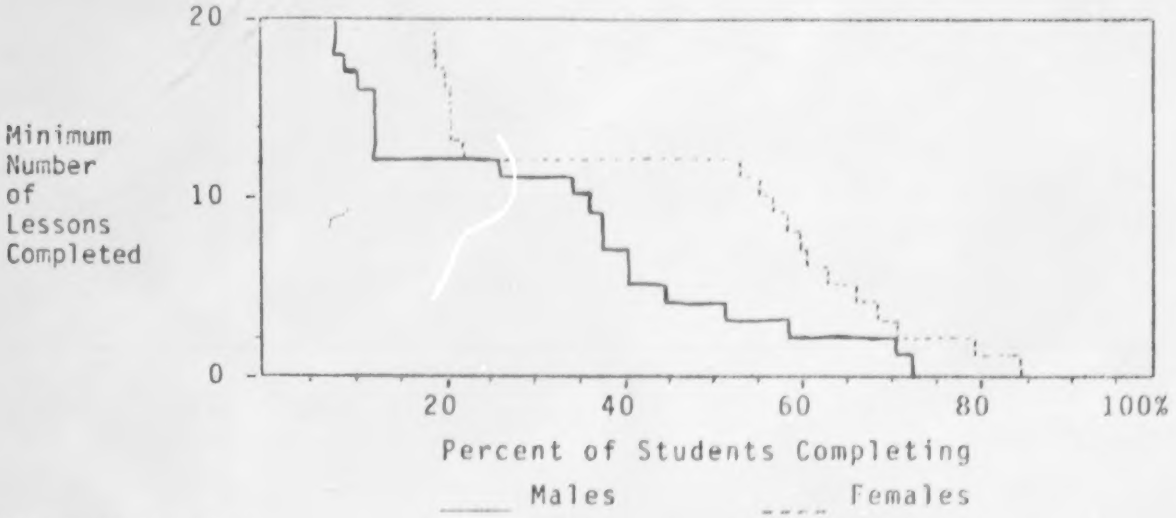
SUMMARY

	Male	Female	Total
Total Lessons Completed	264	910	1174
Total Course Registration	56	125	181
Average Number of Lessons Completed Per Course	4.73	7.28	6.49
Average Number of Marking Units Per Course*	N.A.	N.A.	6.78
Course Completion Rate**	N.A.	N.A.	31.5%

* Includes lessons and tests.
** Includes COP and Completed (Exam Passed)

Subject Area: Business - Technical - Vocational Level: Grade 10

SUBJECT AREA PROFILE



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	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	70	17	0	87
Completed Our Purposes (COP)	2	2	0	4
Completed (Exam Passed)	80	11	0	91
Completed (Exam Failed)	1	0	0	1
Reregistered	37	2	0	39
Total	190	32	0	222

SUMMARY

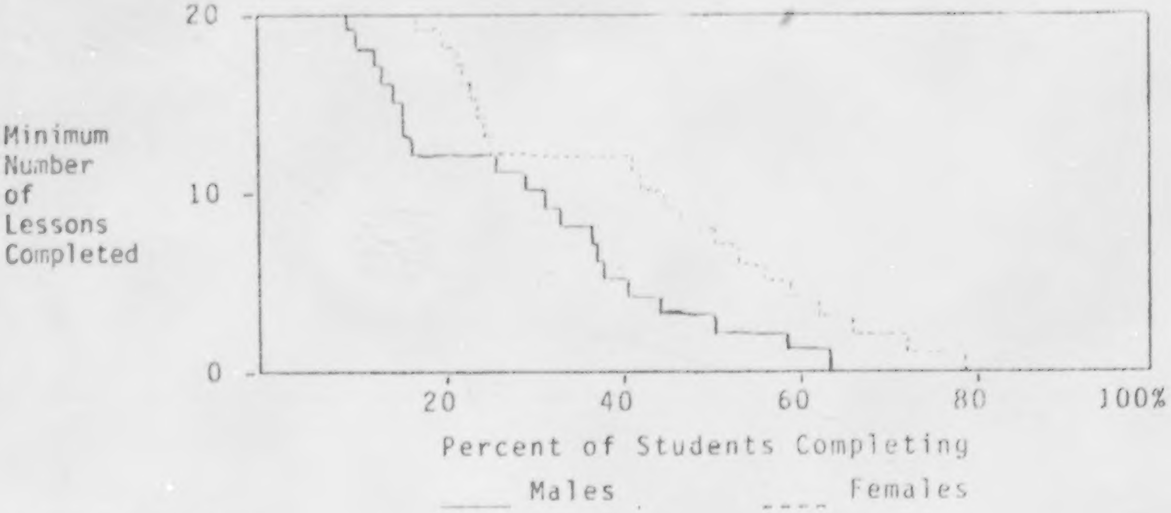
	Male	Female	Total
Total Lessons Completed	368	1537	1905
Total Course Registration	58	164	222
Average Number of Lessons Completed Per Course	6.34	9.37	8.58
Average Number of Marking Units Per Course*	N.A.	N.A.	9.01
Course Completion Rate**	N.A.	N.A.	42.8%

* Includes lessons and tests.

** Includes COP and Completed (Exam Passed)

Subject Area: All Subjects Level: Grade 10

SUBJECT AREA PROFILE



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	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	329	44	0	373
Completed Our Purposes (COP)	9	4	0	13
Completed (Exam Passed)	239	20	0	259
Completed (Exam Failed)	6	1	0	7
Reregistered	124	8	0	132
Total	707	77	0	784

SUMMARY

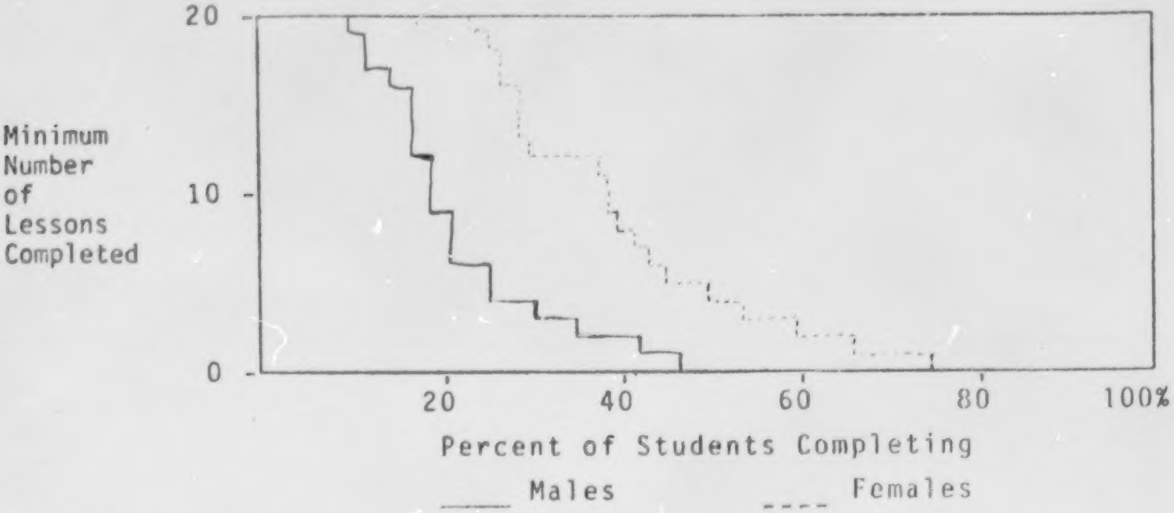
	Male	Female	Total
Total Lessons Completed	1566	4522	6088
Total Course Registration	258	526	784
Average Number of Lessons Completed Per Course	6.07	8.60	7.77
Average Number of Marking Units Per Course*	N.A.	N.A.	8.11
Course Completion Rate**	N.A.	N.A.	34.7%

* Includes lessons and tests.

** Includes COP and Completed (Exam Passed)

Subject Area: Language Arts & Social Sciences **Level:** Grade 11

SUBJECT AREA PROFILE



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	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	61	13	0	74
Completed Our Purposes (COP)	0	0	0	0
Completed (Exam Passed)	31	6	1	38
Completed (Exam Failed)	0	1	0	1
Reregistered	16	5	0	21
Total	108	25	1	134

SUMMARY

	Male	Female	Total
Total Lessons Completed	187	730	917
Total Course Registration	43	91	134
Average Number of Lessons Completed Per Course	4.35	8.02	6.84
Average Number of Marking Units Per Course*	N.A.	N.A.	7.16
Course Completion Rate**	N.A.	N.A.	28.4%

* Includes lessons and tests.

** Includes COP and Completed (Exam Passed)

Subject Area: Maths & Sciences Level: Grade 11

SUBJECT AREA PROFILE

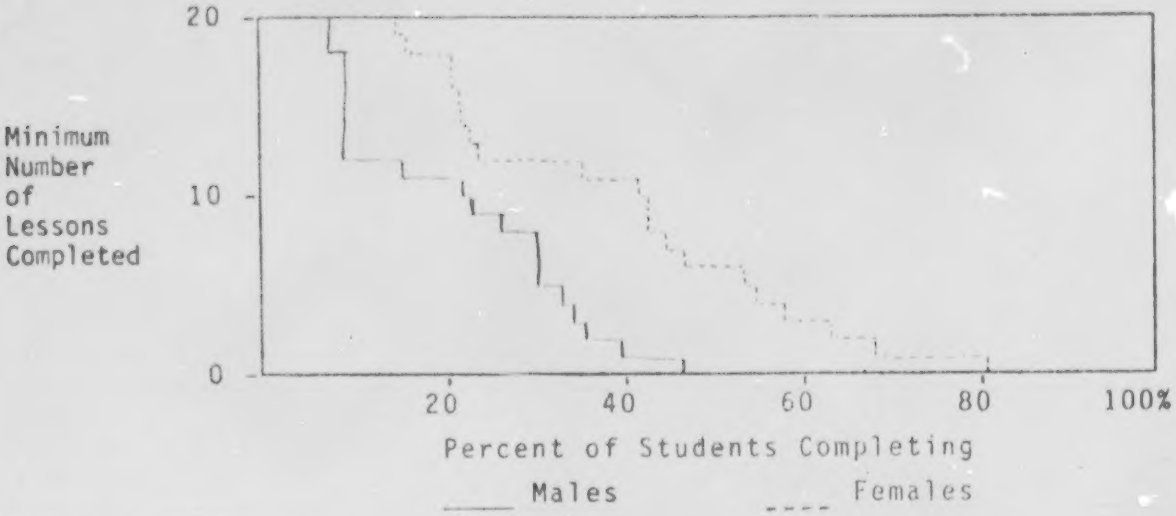


TABLE OF CONTENTS

	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	81	21	1	103
Completed Our Purposes (COP)	2	0	0	2
Completed (Exam Passed)	40	5	0	45
Completed (Exam Failed)	2	0	0	2
Reregistered	14	4	0	18
Total	139	30	1	170

SUMMARY

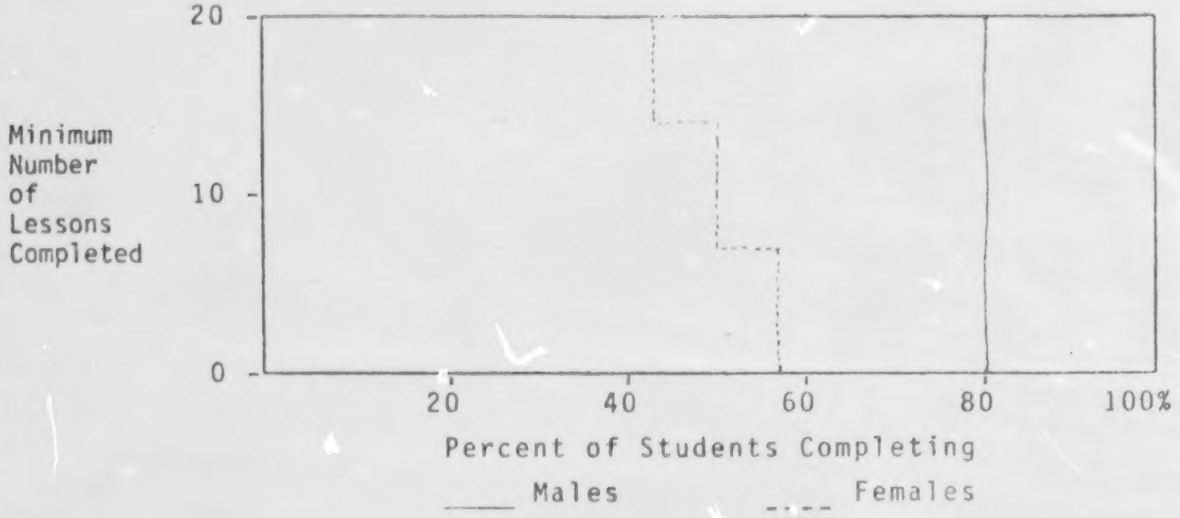
	Male	Female	Total
Total Lessons Completed	313	767	1080
Total Course Registration	73	97	170
Average Number of Lessons Completed Per Course	4.29	7.91	6.35
Average Number of Marking Units Per Course*	N.A.	N.A.	6.63
Course Completion Rate**	N.A.	N.A.	27.6%

* Includes lessons and tests.

** Includes COP and Completed (Exam Passed)

Subject Area: Second Languages Level: Grade 11

SUBJECT AREA PROFILE



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	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	5	1	0	6
Completed Our Purposes (COP)	0	0	0	0
Completed (Exam Passed)	10	0	0	10
Completed (Exam Failed)	0	0	0	0
Reregistered	3	0	0	3
Total	18	1	0	19

SUMMARY

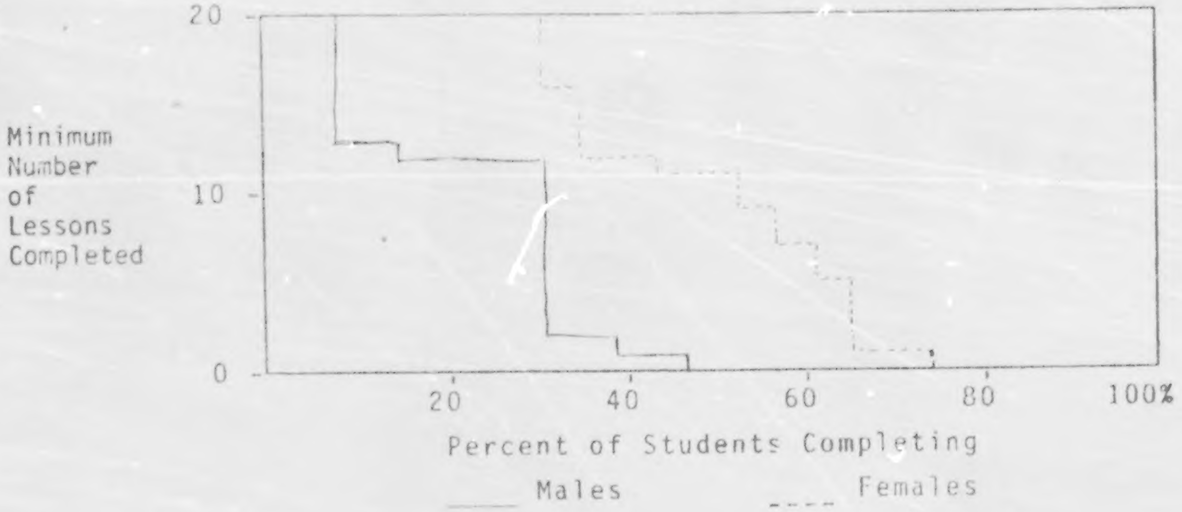
	Male	Female	Total
Total Lessons Completed	80	139	219
Total Course Registration	5	14	19
Average Number of Lessons Completed Per Course	16	9.9	11.5
Average Number of Marking Units Per Course*	N.A.	N.A.	12.1
Course Completion Rate**	N.A.	N.A.	52.6

* Includes lessons and tests.

** Includes COP and Completed (Exam Passed)

Subject Area: Fine Arts and Personal Development Level: Grade 11

SUBJECT AREA PROFILE



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	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	12	7	0	19
Completed Our Purposes (COP)	0	0	0	0
Completed (Exam Passed)	10	2	0	12
Completed (Exam Failed)	0	0	0	0
Reregistered	4	1	0	5
Total	26	10	0	36

SUMMARY

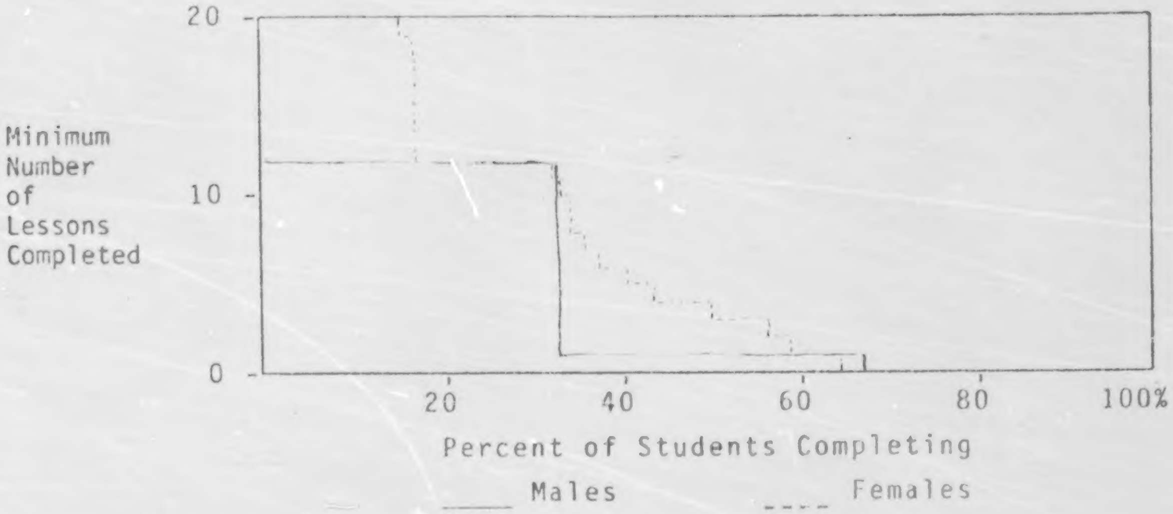
	Male	Female	Total
Total Lessons Completed	60	225	285
Total Course Registration	13	23	36
Average Number of Lessons Completed Per Course	4.62	9.8	7.9
Average Number of Marking Units Per Course*	N.A.	N.A.	8.3
Course Completion Rate**	N.A.	N.A.	33.3%

* Includes lessons and tests.

** Includes COP and Completed (Exam Passed)

Subject Area: Business - Vocational - Technical   Level: Grade 11

SUBJECT AREA PROFILE



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	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	26	10	0	36
Completed Our Purposes (COP)	0	0	0	0
Completed (Exam Passed)	21	0	0	21
Completed (Exam Failed)	0	0	0	0
Reregistered	9	1	0	10
Total	56	11	0	67

SUMMARY

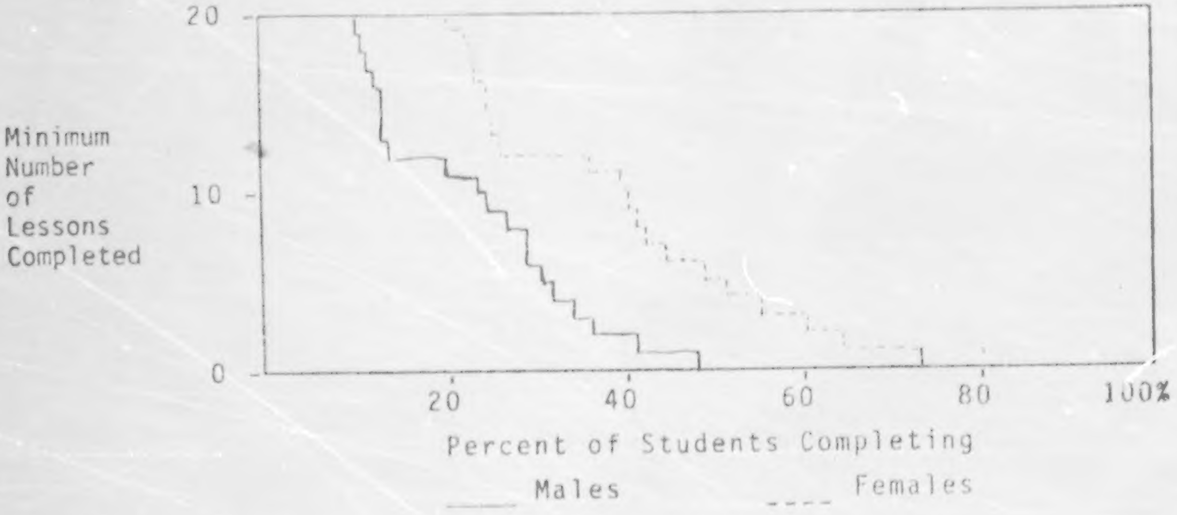
	Male	Female	Total
Total Lessons Completed	13	321	334
Total Course Registration	3	64	67
Average Number of Lessons Completed Per Course	4.33	5.0	5.0
Average Number of Marking Units Per Course*	N.A.	N.A.	5.3
Course Completion Rate**	N.A.	N.A.	31.3%

* Includes lessons and tests.

** Includes COP and Completed (Exam Passed)

Subject Area: All Subjects Level: Grade 11

SUBJECT AREA PROFILE



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	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	185	52	1	238
Completed Our Purposes (COP)	2	0	0	2
Completed (Exam Passed)	112	13	1	126
Completed (Exam Failed)	2	1	0	3
Reregistered	46	11	0	57
Total	347	77	2	426

SUMMARY

	Male	Female	Total
Total Lessons Completed	653	2182	2835
Total Course Registration	137	289	426
Average Number of Lessons Completed Per Course	4.8	7.6	6.7
Average Number of Marking Units Per Course*	N.A.	N.A.	7.0
Course Completion Rate**	N.A.	N.A.	30.0%

* Includes lessons and tests.
** Includes COP and Completed (Exam Passed)

Subject Area: Language Arts and Social Sciences **Level:** Grade 12

SUBJECT AREA PROFILE

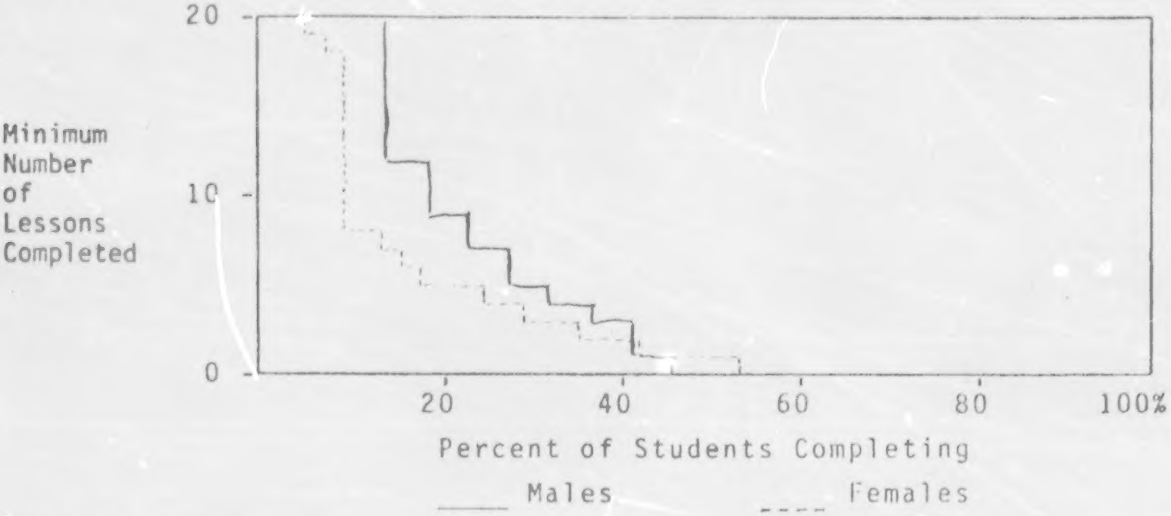


TABLE OF CONTENTS

	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	34	16	0	50
Completed Our Purposes (COP)	0	0	0	0
Completed (Exam Passed)	6	1	0	7
Completed (Exam Failed)	0	0	0	0
Reregistered	9	1	0	10
Total	49	18	0	67

SUMMARY

	Male	Female	Total
Total Lessons Completed	101	148	249
Total Course Registration	22	45	67
Average Number of Lessons Completed Per Course	4.59	3.29	3.72
Average Number of Marking Units Per Course*	N.A.	N.A.	3.82
Course Completion Rate**	N.A.	N.A.	10.4%

* Includes lessons and tests.
** Includes COP and Completed (Exam Passed)

A14 Subject Area: Maths and Sciences Level: Grade 12

SUBJECT AREA PROFILE

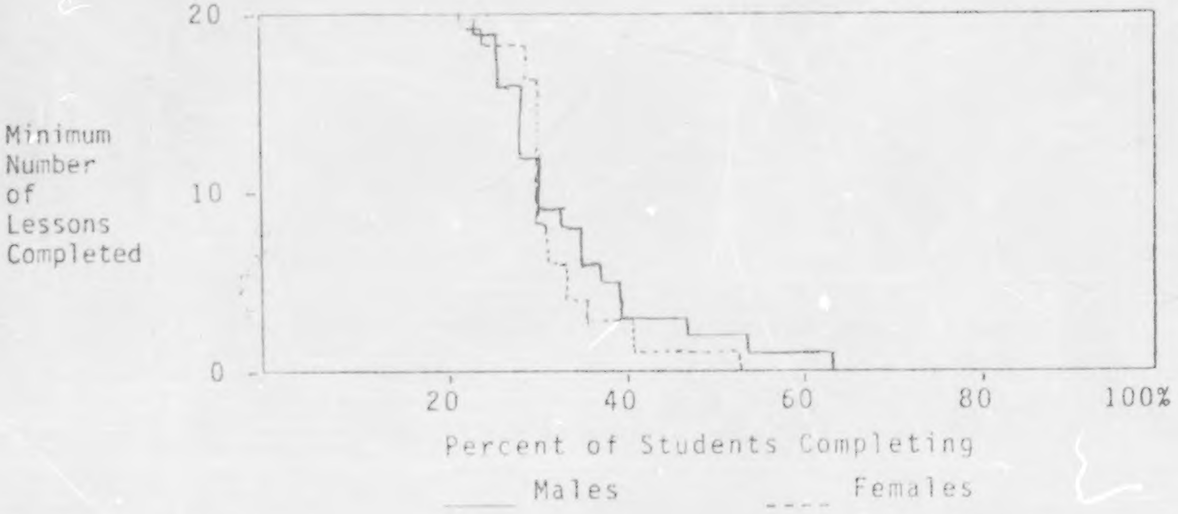


TABLE OF CONTENTS

	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	42	10	0	52
Completed Our Purposes (COP)	2	1	0	3
Completed (Exam Passed)	19	3	0	22
Completed (Exam Failed)	0	0	0	0
Reregistered	8	0	0	8
Total	71	14	0	85

SUMMARY

	Male	Female	Total
Total Lessons Completed	294	262	556
Total Course Registration	43	42	85
Average Number of Lessons Completed Per Course	6.8	6.2	6.5
Average Number of Marking Units Per Course*	N.A.	N.A.	6.8
Course Completion Rate**	N.A.	N.A.	25.9%

* Includes lessons and tests.

** Includes COP and Completed (Exam Passed)

Subject Area: 2nd Languages Level: Grade 12

SUBJECT AREA PROFILE

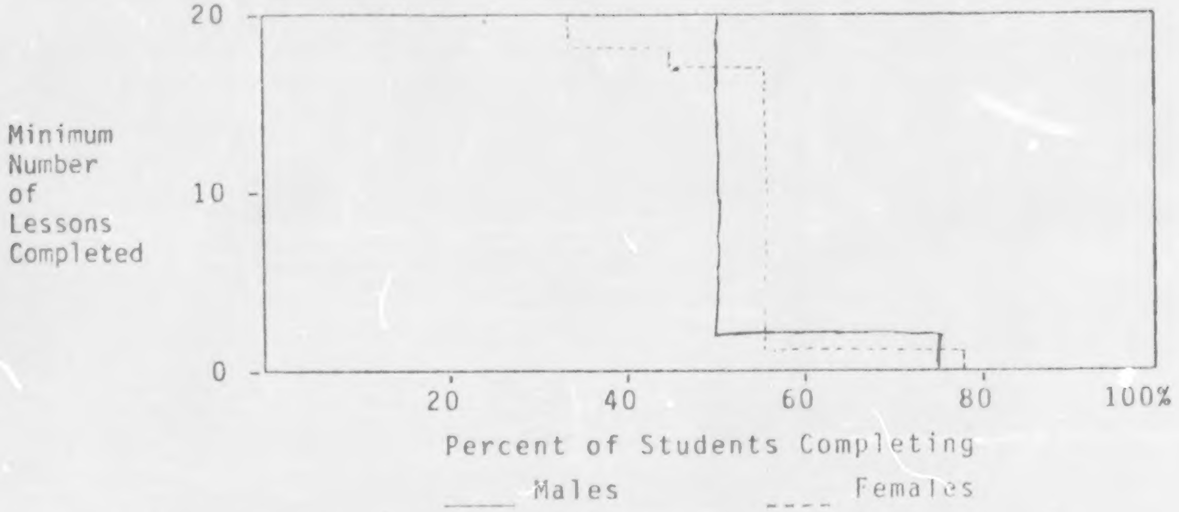


TABLE OF CONTENTS

	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	5	0	0	5
Completed Our Purposes (COP)	0	0	0	0
Completed (Exam Passed)	7	0	0	7
Completed (Exam Failed)	0	0	0	0
Reregistered	1	0	0	1
Total	13	0	0	13

SUMMARY

	Male	Female	Total
Total Lessons Completed	44	99	143
Total Course Registration	4	9	13
Average Number of Lessons Completed Per Course	11.0	11.0	11.0
Average Number of Marking Units Per Course*	N.A.	N.A.	11.5
Course Completion Rate**	N.A.	N.A.	53.8%

* Includes lessons and tests.

** Includes COP and Completed (Exam Passed)

Subject Area: Fine Arts & Personal Development **Level:** Grade 12

SUBJECT AREA PROFILE

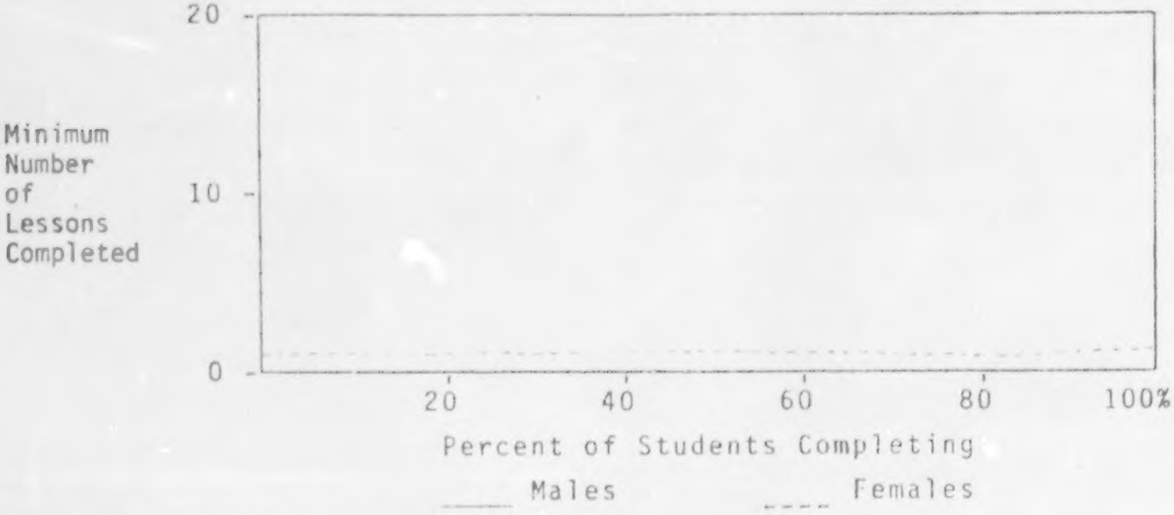


TABLE OF CONTENTS

	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	2	0	0	2
Completed Our Purposes (COP)	0	0	0	0
Completed (Exam Passed)	0	0	0	0
Completed (Exam Failed)	0	0	0	0
Reregistered	1	0	0	1
Total	3	0	0	3

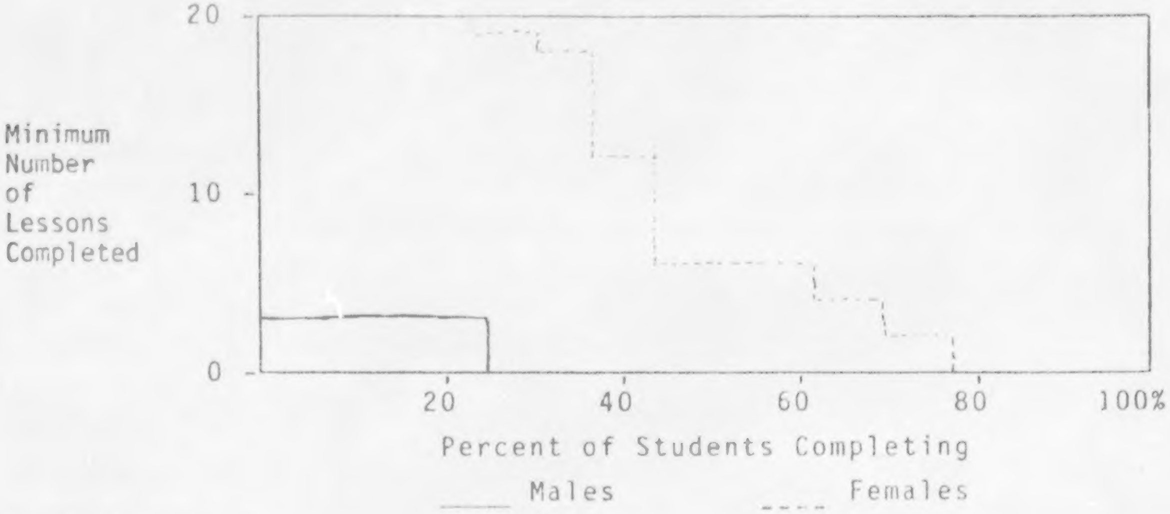
SUMMARY

	Male	Female	Total
Total Lessons Completed	0	2	2
Total Course Registration	1	2	3
Average Number of Lessons Completed Per Course	0	1.0	.67
Average Number of Marking Units Per Course*	N.A.	N.A.	.67
Course Completion Rate**	N.A.	N.A.	0.0

* Includes lessons and tests.
** Includes COP and Completed (Exam Passed)

Subject Area: Business - Technical - Vocational Level: Grade 12

SUBJECT AREA PROFILE



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	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	6	2	0	8
Completed Our Purposes (COP)	0	0	0	0
Completed (Exam Passed)	3	3	0	6
Completed (Exam Failed)	0	0	0	0
Reregistered	2	1	0	3
Total	11	6	0	17

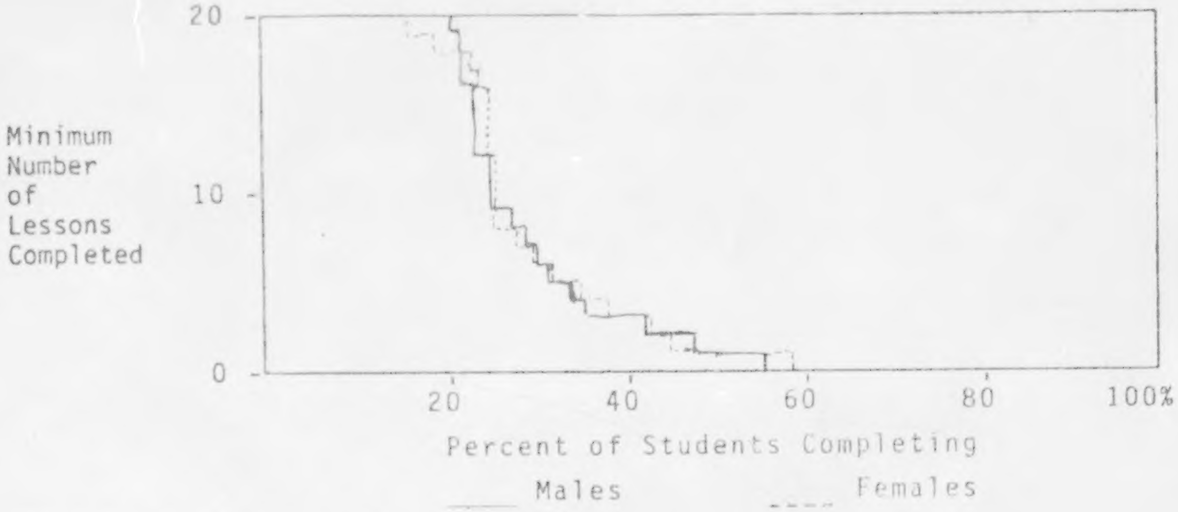
SUMMARY

	Male	Female	Total
Total Lessons Completed	3	139	142
Total Course Registration	4	13	17
Average Number of Lessons Completed Per Course	.75	10.7	8.4
Average Number of Marking Units Per Course*	N.A.	N.A.	8.7
Course Completion Rate**	N.A.	N.A.	35.3%

* Includes lessons and tests.

** Includes COP and Completed (Exam Passed)

SUBJECT AREA PROFILE



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	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	89	28	0	117
Completed Our Purposes (COP)	2	1	0	3
Completed (Exam Passed)	35	7	0	42
Completed (Exam Failed)	0	0	0	0
Reregistered	21	2	0	23
Total	147	38	0	185

SUMMARY

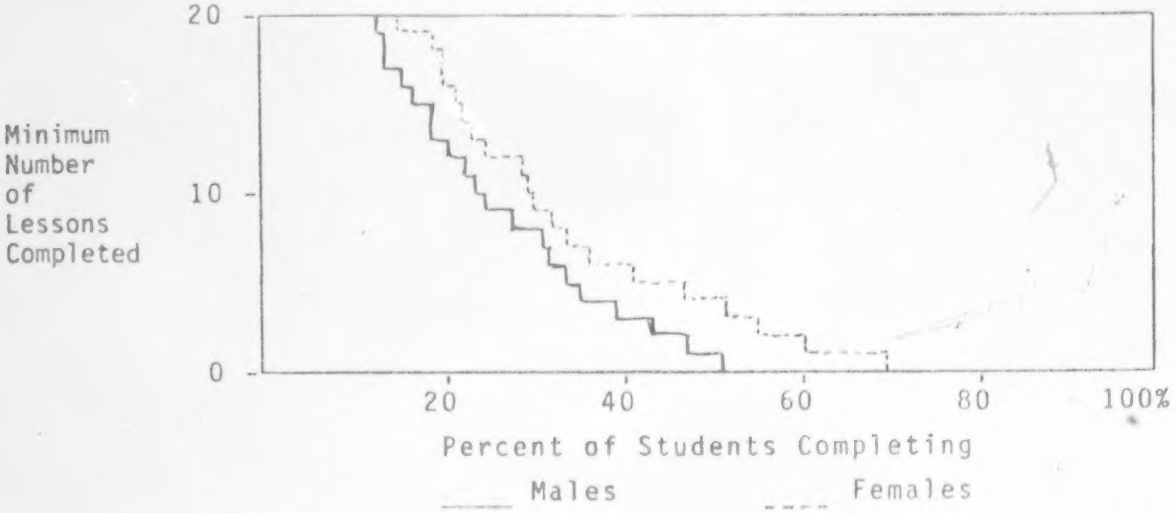
	Male	Female	Total
Total Lessons Completed	442	650	1092
Total Course Registration	74	111	185
Average Number of Lessons Completed Per Course	6.0	5.9	5.9
Average Number of Marking Units Per Course*	N.A.	N.A.	6.13
Course Completion Rate**	N.A.	N.A.	24.3%

* Includes lessons and tests.

** Includes COP and Completed (Exam Passed)

Subject Area: Language Arts & Social Sciences   Level: All Grades

SUBJECT AREA PROFILE



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	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	131	33	0	164
Completed Our Purposes (COP)	0	0	0	0
Completed (Exam Passed)	55	7	1	63
Completed (Exam Failed)	0	1	0	1
Reregistered	41	7	0	48
Total	227	48	1	276

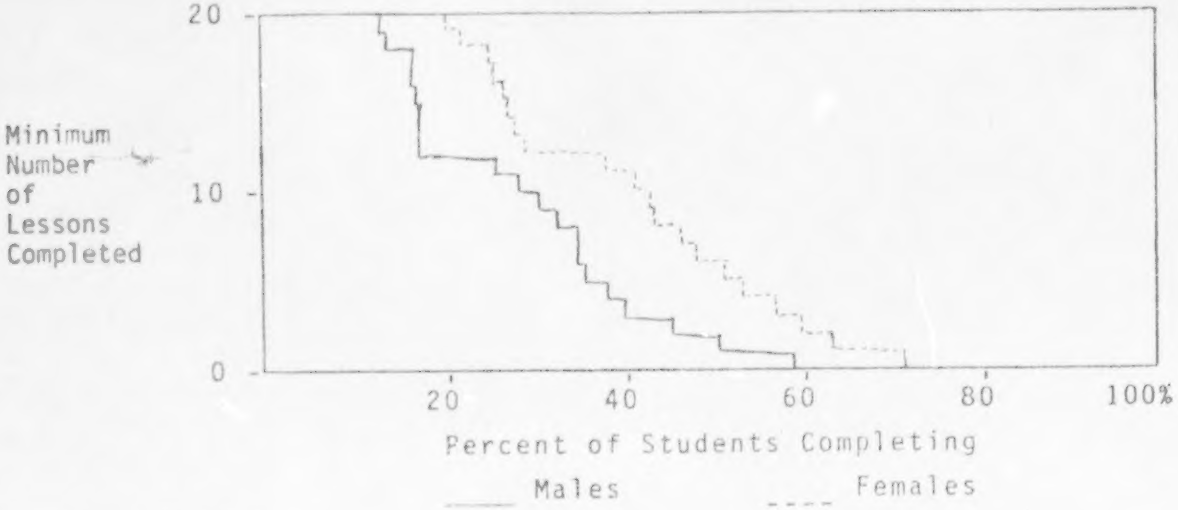
SUMMARY

	Male	Female	Total
Total Lessons Completed	527	1191	1718
Total Course Registration	98	178	276
Average Number of Lessons Completed Per Course	5.4	6.7	6.2
Average Number of Marking Units Per Course*	N.A.	N.A.	6.5
Course Completion Rate**	N.A.	N.A.	22.8%

* Includes lessons and tests.
** Includes COP and Completed (Exam Passed)

A20 **Subject Area:** Maths & Sciences Level: All Grades

SUBJECT AREA PROFILE



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	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	241	45	1	287
Completed Our Purposes (COP)	6	3	0	9
Completed (Exam Passed)	136	13	0	149
Completed (Exam Failed)	5	0	0	5
Reregistered	51	8	0	59
Total	439	69	1	509

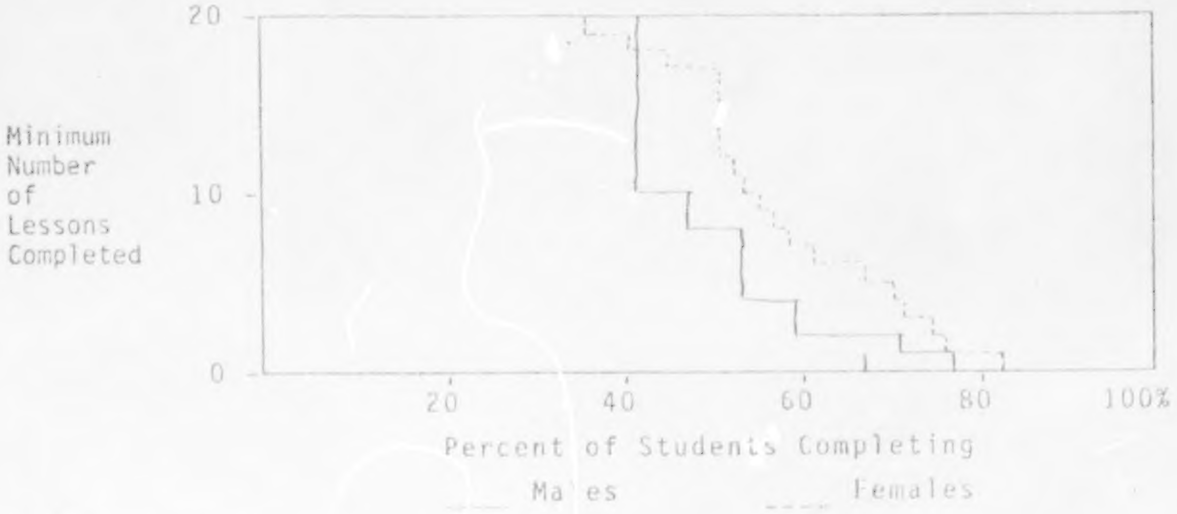
SUMMARY

	Male	Female	Total
Total Lessons Completed	1257	2355	3612
Total Course Registration	219	290	509
Average Number of Lessons Completed Per Course	5.7	8.1	7.1
Average Number of Marking Units Per Course*	N.A.	N.A.	7.4
Course Completion Rate**	N.A.	N.A.	31.0%

* Includes lessons and tests.
** Includes COP and Completed (Exam Passed)

Subject Area: Second Languages Level: All Grades

SUBJECT AREA PROFILE



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	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	35	2	0	37
Completed Our Purposes (COP)	1	0	0	1
Completed (Exam Passed)	30	2	0	32
Completed (Exam Failed)	1	1	0	2
Reregistered	11	1	0	12
Total	78	6	0	84

SUMMARY

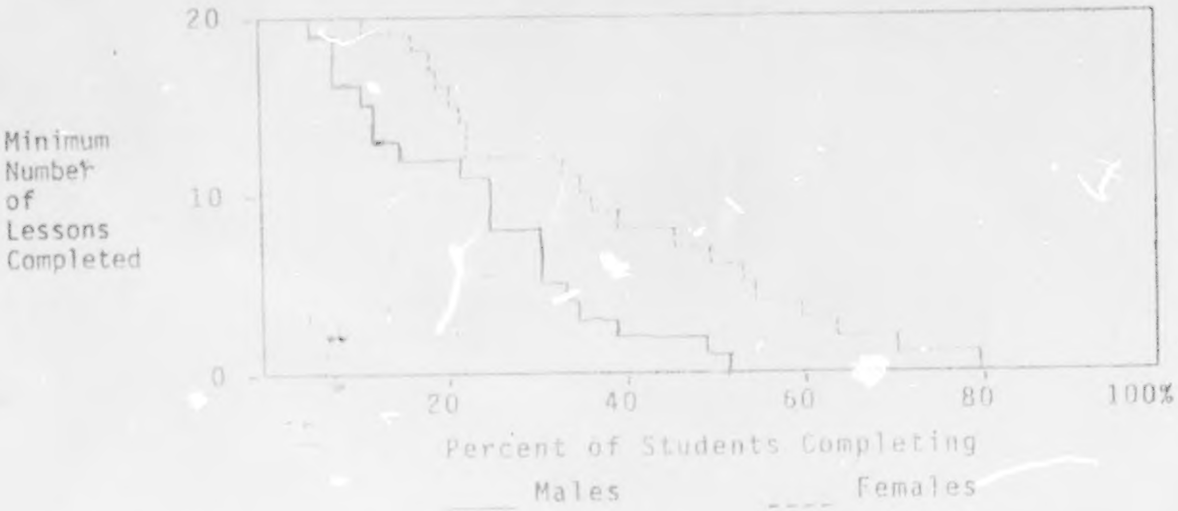
	Male	Female	Total
Total Lessons Completed	169	674	843
Total Course Registration	17	67	84
Average Number of Lessons Completed Per Course	9.9	10.1	10.0
Average Number of Marking Units Per Course*	N.A.	N.A.	10.4
Course Completion Rate**	N.A.	N.A.	39.2

* Includes lessons and tests

** Includes COP and Completed (Exam Passed)

A22 Subject Area: Fine Arts & Personal Dev. Level: All Grades

SUBJECT AREA PROFILE



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	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	94	15	0	109
Completed Our Purposes (COP)	4	0	0	4
Completed (Exam Passed)	61	4	0	65
Completed (Exam Failed)	1	0	0	1
Reregistered	40	1	0	41
Total	200	20	0	220

SUMMARY

	Male	Female	Total
Total Lessons Completed	324	1137	1461
Total Course Registration	70	150	220
Average Number of Lessons Completed Per Course	4.63	7.58	6.64
Average Number of Marking Units Per Course*	N.A.	N.A.	6.94
Course Completion Rate**	N.A.	N.A.	29.5%

* Includes lessons and tests.
** Includes COP and Completed (Exam Passed)

Subject Area: Business - Vocational - Technical Level: All Grades

SUBJECT AREA PROFILE

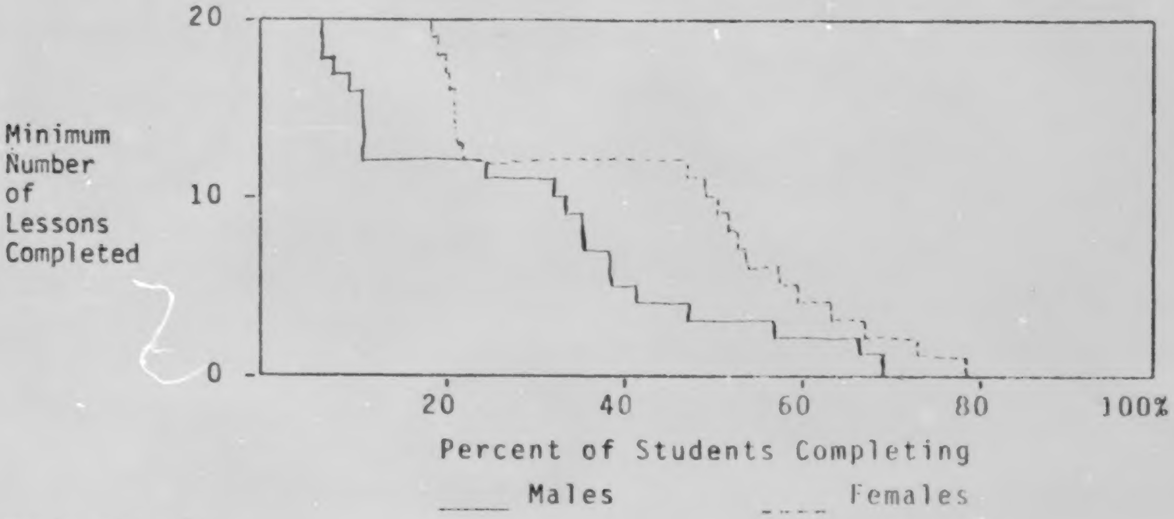

TABLE OF CONTENTS

	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	102	29	0	131
Completed Our Purposes (COP)	2	2	0	4
Completed (Exam Passed)	104	14	0	118
Completed (Exam Failed)	1	0	0	1
Reregistered	48	4	0	52
Total	257	49	0	306

SUMMARY

	Male	Female	Total
Total Lessons Completed	384	1997	2381
Total Course Registration	65	241	306
Average Number of Lessons Completed Per Course	5.91	8.29	7.78
Average Number of Marking Units Per Course*	N.A.	N.A.	8.17
Course Completion Rate**	N.A.	N.A.	39.9

* Includes lessons and tests.
** Includes COP and Completed (Exam Passed)

A24 Subject Area: All Subjects Level: All Grades

SUBJECT AREA PROFILE

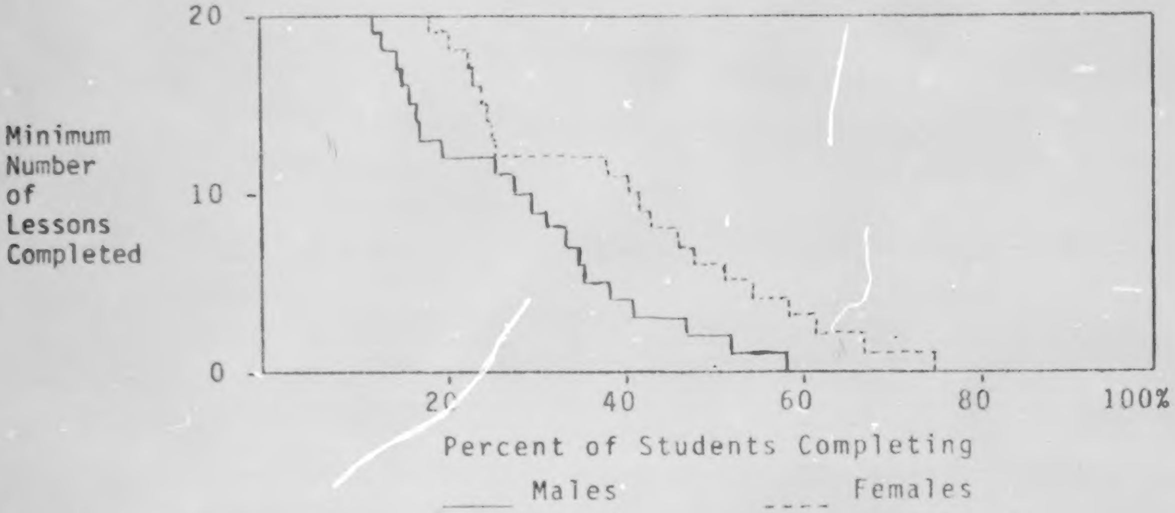

TABLE OF CONTENTS

	1st Course Results	2nd Course Results	3rd Course Results	Total
Incomplete	605	124	1	730
Completed Our Purposes (COP)	13	5	0	18
Completed (Exam Passed)	386	40	1	427
Completed (Exam Failed)	8	2	0	10
Reregistered	191	21	0	212
Total	1203	192	2	1397

SUMMARY

	Male	Female	Total
Total Lessons Completed	2681	7374	10,055
Total Course Registration	429	928	1,397
Average Number of Lessons Completed Per Course	5.71	7.95	7.20
Average Number of Marking Units Per Course*	N.A.	N.A.	7.51
Course Completion Rate**	N.A.	N.A.	31.9%

* Includes lessons and tests.

** Includes COP and Completed (Exam Passed)

STAGE II: STUDY OUTLINE

Stage II represents a more detailed cost-benefit analysis of the Alberta Correspondence School (ACS). Three areas are proposed for study: benefits, costs, and a systems analysis of the functions associated with: lesson marking and handling; record-keeping, and lesson development, printing, and distribution.

Research Questions

Benefits

1. What students derive benefit from the ACS? What other alternatives might they have?
2. What norms of performance are achieved/expected by grade, subject area, etc.? What is the experience of other correspondence schools?
3. What is the performance of students who re-register in courses?

Costs

1. What is an appropriate lesson marking fee for contracted marking? Descriminate by grade and subject.
2. What is a reasonable level of productivity (marking rate) for teachers? Discriminate by grade and subject.
3. What is the cost of developing, printing, and distributing lessons for each course? What is the most efficient distribution rate?
4. What is the break-even point for each course?
5. What is the cost of maintaining a printing facility? How do these costs compare to contracted printing?
6. How do instructional costs (per pupil, per course) compare with instruction in regular schools or with other correspondence schools?

Systems Analysis

1. Are there specific stumbling blocks in courses (such as difficult lessons) which discourage students? What is the "half-life" (the point at which half the students have dropped out) of each course? Can this be used as a course quality indicator?

2. Is there a mechanism for identifying and encouraging a laggard student at intervals after the last completed lesson or other contact with the student?
3. How much counselling do students receive before and during courses? What type of counselling?
4. What attitudes do students, principals, and teachers hold toward correspondence study?
5. Do students from some schools or jurisdictions perform better than students from others?
6. How is the demand for new courses determined?
7. What is the flow-path of lessons from students, through the ACS, and back to the students? Can this path be shortened or improved?

Data Sources

There are a number of sources of data to be used in this stage of the study.

1. Student record cards. Data will be coded, machine sorted and analyzed.
2. Instructors Weekly Work Report. The data will be coded and analyzed by machine. A regression analysis of the lesson marking information will yield average marking times for lessons in each course.
3. Summary of Student Hours of Work Per Lesson. Statistical analyses will yield average hours of work (difficulty) spent on each lesson in each course. These figures can be used to derive an indicator of course/lesson quality.
4. Records. Existing records will be used to determine printing and lesson distribution costs.
5. Observations. Observations will be made to analyze the lesson flow-path through the ACS.
6. Questionnaires. A questionnaire may be used to assess students' (and others') attitudes.

Report

The Stage II report will contain the study findings and conclusions together with recommendations for optimizing various facets of the ACS.

Schedule

The second stage for the study begins immediately and will be completed by 1 October, 1976.

APPENDIX 2

CORRESPONDENCE FROM K. J. DOELING
TO W. HATHAWAY

Alberta MEMORANDUM
EDUCATION

FROM (Mrs.) K. J. Doeling
Alberta Correspondence School

OUR FILE REFERENCE

OUR FILE REFERENCE

TO Dr. W. Hathaway
Education Consultant
Department of Education

DATE January 29, 1976

TELEPHONE

SUBJECT

Since the Alberta Correspondence School is accredited, we follow the same goals of education as all other accredited schools in Alberta. These goals appear on pages 2-4 of the enclosed Junior-Senior High School Handbook.

The only difference between our School and that of other publicly-supported schools in Alberta is our method of teaching: the correspondence method rather than the classroom method or group discussion method. Our specific guidelines are as follows:

1. The main purpose of the Alberta Correspondence School will be to prepare, publish and administer correspondence courses in the subjects of basic education, Grades I to XII, and to supervise pupils who are pursuing these courses. The correspondence courses in basic education will be revised and reissued as is found necessary because of changes in curriculum and the introduction of improved methods of presenting education by correspondence.

2. A second purpose of the School will be to prepare courses primarily for adults provided that there is sufficient demand for such courses and provided that any such proposed course is not being offered through correspondence by any other publicly supported agency.

(Mrs.) K. J. Doeling
ASSISTANT DIRECTOR

KJD/jlb

Encl.

APPENDIX 3

CORRESPONDENCE FROM S. N. ODYNAK TO W. R. DUKE

Alberta
EDUCATION

FROM S. N. Odynak
Associate Deputy Minister
Support Services

OUR FILE REFERENCE

YOUR FILE REFERENCE

TO Dr. W. R. Duke
Director
Planning and Research

DATE January 2, 1976

TELEPHONE

SUBJECT ATTACHED REPORT - CORRESPONDENCE SCHOOL

This may be a bit late in view of the fact that the Study of the Correspondence School Branch may be beyond the planning stage.

In any event, I thought you might be interested in this report from the point of view that it may mean a complete re-equipping of the printing section of the Correspondence School. At this stage, I am wondering what the capital investment may be and whether a look at "printing costs" and "capital investment" is necessary.

Your advice would be appreciated.

SNOdynak

SNO/mp
Encl.

APPENDIX 4

DATA COLLECTION FORM

SUMMARY OF STUDENT HOURS OF WORK PER LESSON

Instructions: Record the student's estimate of the time required to complete a lesson in the appropriate column. Do not overflow the column.

COURSE: Accounting 10

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	3.5	9	4	4	8	6	[illegible]	3.5	6	1.5	2	2								
	3	2	4	5	5	3	[illegible]	3	4.5	16	3									
	6	3	4	4	5	12	4	3.5	4.5	3	4	3.5								
	5	20	4	5	4	2.5	6	3	6	1.5	1.5	2								
	5	6	[illegible]	7	3	2.5	2.5	4	7	4	3	3								
	5	2	8	4	4	5	1.5	5	4	2.5	2	2								
	1	3	4	5	5	4	4.5	4	9	2.5	3	2.5								
	2.5	5	4.5	4	6.5	4	4	3.5	6	4	2	2								
	3.5	3.5	4.5	3.5	4	4	2.5	7	6	1.5	5	2.5								
	3	4.5	4	5	12.5	4.5	4.5	[illegible]	3	1	2	2.5								
	5	3	2	5	3	5	4	3	3	7	3.5	4								
	4	6	3	4	11	8	4	4	3	1.5	2	5.5								
	3.5	9	4	3	5	[illegible]	[illegible]	4	3.5	2.5	1.5	4.5								
	1	2	5.5	5	3	[illegible]	3	3.5	24	2	1.5	2.5								
	6	2	7	4.5	4	3.5	3	2.5	3.5	3	2	9								
	2	1.5	[illegible]	4	5	2.5	4	20	9	2	2	3.5								
	6	2.5	1.5	4	3	6.0	5	5.5	11	2	3	3								
	4.5	5	4	5	4	4.	5	3.0	[illegible]	1	1	6								
	3	4.5	5	3.5	4	10	2.5	5	7	1.5	2	2								
	3.5	3	7	5	6	5.5	4.5	3	8	5	16	2								
	8	1.5	4	6	5.5	3	6.0	3	11	4	3	2								
	3	5	2	8	3	3.5	5	2.5	20	1.5	12	3.5								
	3.5	3	6	4.5	6	4	5	[illegible]	7	1.5	3	3								
	4	1	2.5	3	2	4.5	3.5	10	[illegible]	2	1.5	16								
	2	2.5	4.5	2.5	4	3.5	3.5	2.5	4	2	2	3								
	3	2	4.5	4.5	4.5	7	4	4	10.5	3	[illegible]	3								
	20	4.5	4	6	3	2.5	4.5	5	5.5	4	1	3								
	3	3	40	1	1.5	4.5	5.5	[illegible]	4		2	2								
	1.5	3	[illegible]	5	5	5.5	6	[illegible]	2			1.5								
	2	4.5	5.5	5	2	9.0	9	[illegible]	8			2.5								
	3.5	3	10	3.5	4	4.0	8	[illegible]	6			1.5								
	3	1	6.5	6.0	4	6.0	6	[illegible]	11			2.5								
	5.5	3	3.5	5.5	[illegible]	6.0	6	4	6			2								
	3.5	1.5	3	3.0	4	3.0	[illegible]	2.5	3.5											
	4	2.5	[illegible]	3.5	3	5.0	4.5	4	2.0											
	4	3	6	5	7.5	5.0	[illegible]	3	5											
	3	5	4	4	5	3.	5	4.5	16											
Total	156.5	143.0	226.0	164.0	182.0	182.0	160.0	151.5	264.5	100.5	91.5	123.0								
N	37	37	37	37	37	37	37	37	37	27	28	33								
$\bar{X}$	4.23	3.86	6.11	4.43	4.92	4.92	4.32	4.09	7.15	3.72	3.27	3.73								
SD	3.16	3.25	6.53	1.34	2.24	2.01	1.48	1.78	5.07	3.77	3.20	3.38								
SD/$\bar{X}$	0.747	0.84	1.07	0.30	0.46	0.41	0.34	0.44	0.71	1.01	0.98	0.91								

APPENDIX 5

ATTITUDE SURVEY QUESTIONNAIRE

Alberta
EDUCATION

Executive Building
10105 - 109 Street
Edmonton, Alberta, Canada
T5J 2V2

Dear Colleague:

The Planning and Research Branch of Alberta Education is conducting a study of the Alberta Correspondence School. Because of your direct involvement in the learning experiences of students, you are an important contributor to this study.

Please be kind enough to complete the attached opinionnaire and return it to Mrs. K. Doeling. *Please omit the questions on page 5 since they do not apply to teachers*. *Please answer all other questions*.

Thank you for your cooperation.

Sincerely,

Warren Hathaway

Warren E. Hathaway, Ph.D.
Education Consultant
Planning and Research Branch

/jp

Alberta
EDUCATION

Executive Building
10105 - 109 Street
Edmonton, Alberta, Canada
T5J 2V2

Dear

The Planning and Research Branch of Alberta Education is conducting a study of the Alberta Correspondence School. Because some students from your school have enrolled in correspondence studies, you are an important contributor to this study.

Please be kind enough to complete the enclosed opinionnaire and return it in the self-addressed envelope provided. *Please omit the questions on page 5 since they do not apply to school principals. Please answer all other questions.*

Thank you for your cooperation.

Sincerely,

Warren E. Hathaway, Ph.D.
Education Consultant
Planning and Research Branch.

WEH/bs

Alberta
EDUCATION

Executive Building
10105 - 109 Street
Edmonton, Alberta, Canada
T5J 2V2

Dear

The Planning and Research Branch of Alberta Education is conducting a study of the Alberta Correspondence School. Because you have enrolled in correspondence courses, you are an important contributor to this study.

Please be kind enough to complete the attached opinionnaire and return it in the self-addressed envelope provided. *It is important that you answer all questions*.

Thank you for your cooperation.

Sincerely,

Warren Hathaway

Warren E. Hathaway, Ph.D.
Education Consultant
Planning and Research Branch

/jp

Is *Learning* Cold or Hot?

Please Judge.

The purpose of this study is to measure your emotional responses to several concepts by having you judge them on a series of descriptive scales. Please make your judgements on the basis of what these concepts mean to you. Do not worry or puzzle over individual items. It is your first impressions, your immediate responses, that we want. On the other hand, please do not be careless, because we want your true impressions.

Example

There are seven positions on each scale. If you feel that *learning* is very closely related to one end of the scale, place your check mark next to the appropriate adjective:

Cold |_X_|___|___|___|___|___|___| Hot

Cold |___|___|___|___|___|___|_X_| Hot

If you feel that the concept is closely related to one end of the scale (but not extremely), place your check mark as follows:

Cold |___|_X_|___|___|___|___|___| Hot

Cold |___|___|___|___|___|_X_|___| Hot

If the concept seems only slightly related to one side as opposed to the other (but not really neutral), then you should place your check mark as follows.

Cold |___|___|_X_|___|___|___|___| Hot

Cold |___|___|___|___|_X_|___|___| Hot

The direction toward which you check, of course, depends upon which of the two ends of the scale seems most characteristic of *learning*.

If you consider *learning* to be neutral on the scale, or if the scale is completely irrelevant to *learning* place your check mark in the centre space.

Cold |___|___|___|_X_|___|___|___| Hot

Go to page 2

Learning is . . .

1 Good |___|___|___|___|___|___|___| Bad

2 Dishonest |___|___|___|___|___|___|___| Honest

3 Fair |___|___|___|___|___|___|___| Unfair

4 Dirty |___|___|___|___|___|___|___| Clean

5 Tasty |___|___|___|___|___|___|___| Distasteful

6 Worthless |___|___|___|___|___|___|___| Valuable

7 Pleasant |___|___|___|___|___|___|___| Unpleasant

8 Awful |___|___|___|___|___|___|___| Nice

9 Independent |___|___|___|___|___|___|___| Dependent

10 Rigid |___|___|___|___|___|___|___| Flexible

11 Hard |___|___|___|___|___|___|___| Soft

12 Weak |___|___|___|___|___|___|___| Strong

13 Heavy |___|___|___|___|___|___|___| Light

14 Narrow |___|___|___|___|___|___|___| Wide

15 Sharp |___|___|___|___|___|___|___| Dull

16 Cold |___|___|___|___|___|___|___| Hot

17 Active |___|___|___|___|___|___|___| Passive

18 Slow |___|___|___|___|___|___|___| Fast

Go to page 3

Learning in the classroom is . . .

1 Good |___|___|___|___|___|___|___| Bad

2 Dishonest |___|___|___|___|___|___|___| Honest

3 Fair |___|___|___|___|___|___|___| Unfair

4 Dirty |___|___|___|___|___|___|___| Clean

5 Tasty |___|___|___|___|___|___|___| Distasteful

6 Worthless |___|___|___|___|___|___|___| Valuable

7 Pleasant |___|___|___|___|___|___|___| Unpleasant

8 Awful |___|___|___|___|___|___|___| Nice

9 Independent |___|___|___|___|___|___|___| Dependent

10 Rigid |___|___|___|___|___|___|___| Flexible

11 Hard |___|___|___|___|___|___|___| Soft

12 Weak |___|___|___|___|___|___|___| Strong

13 Heavy |___|___|___|___|___|___|___| Light

14 Narrow |___|___|___|___|___|___|___| Wide

15 Sharp |___|___|___|___|___|___|___| Dull

16 Cold |___|___|___|___|___|___|___| Hot

17 Active |___|___|___|___|___|___|___| Passive

18 Slow |___|___|___|___|___|___|___| Fast

Go to page

4

Learning by correspondence is . . .

1	Good								Bad
2	Dishonest								Honest
3	Fair								Unfair
4	Dirty								Clean
5	Tasty								Distasteful
6	Worthless								Valuable
7	Pleasant								Unpleasant
8	Awful								Nice
9	Independent								Dependent
10	Rigid								Flexible
11	Hard								Soft
12	Weak								Strong
13	Heavy								Light
14	Narrow								Wide
15	Sharp								Dull
16	Cold								Hot
17	Active								Passive
18	Slow								Fast

Go to page 5

1. Why did you enrol in a correspondence course?
   - a. Personal interest in the subject.
   - b. To complete my high school program.
   - c. To meet requirements for work.
   - d. To meet requirements for technical school, college, or universities.
   - e. Other (please specify) ____________________

2. Was the course you chose locally available?
   - a. Yes, in a local school during the day during the winter session.
   - b. Yes, in a local school at night during the winter session
   - c. Yes, in a local school during the summer.
   - d. Yes, several of the above.
   - e. Yes, other (please specify) ____________________
   - f. No.

Use the following categories to answer question 3.
Write the appropriate letter in each box.

- A. Read rarely or never
- B. Read occasionally
- C. Read regularly
- D. Read extensively

3. How much do you read?
   - a. Newspapers ☐
   - b. Special interest magazines ☐
   - c. Novels ☐
   - d. Technical or job related material ☐

Go to page 6

Instructions.

- There are twenty-nine pairs of statements below.
- Read each pair carefully.
- Circle either (a) or (b) to indicate the statement you most agree with. *(you may not agree entirely with either statement — only indicate the one you* *__most__* *agree with.)*
- Answer all items.

---

1. a. Children get into trouble because their parents punish them too much.
   b. The trouble with most children nowadays is that their parents are too easy with them.

2. a. Many of the unhappy things in people's lives are partly due to bad luck.
   b. People's misfortunes result from the mistakes they make.

3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.
   b. There will always be wars, no matter how hard people try to prevent them.

4. a. In the long run people get the respect they deserve in this world.
   b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5. a. The idea that teachers are unfair to students is nonsense.
   b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

6. a. Without the right breaks one cannot be an effective leader.
   b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. a. No matter how hard you try some people don't like you.
   b. People who can't get others to like them don't understand how to get along with others.

8. a. Heredity plays the major role in determining one's personality.
   b. It is one's experiences in life which determine what they're like.

9. a. I have often found that what is going to happen will happen.
   b. Trusting in fate has never turned out as well for me as making a decision to take a definite course of action.

10. a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
    b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
    b. Getting a good job depends mainly on being in the right place at the right time.

12. a. The average citizen can have an influence in government decisions.
    b. The world is run by a few people in power, and there is not much the little guy can do about it.

Go to page 7

13. a. When I make plans, I am almost certain that I can make them work.
    b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14. a. There is some good in everybody.
    b. There are certain people who are just no good.

15. a. In my case getting what I want has little or nothing to do with luck.
    b. Many times we might just as well decide what to do by flipping a coin.

16. a. Who gets to be boss often depends on who was lucky enough to be in the right place first.
    b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

17. a. As far as the world is concerned, most of us are the victims of forces we can neither understand, or control.
    b. By taking an active part in political and social affairs the people can control world events.

18. a. Most people don't realize the extent which their lives are controlled by accidental happenings.
    b. There really is no such things as "luck".

19. a. One should always be willing to admit mistakes.
    b. It is usually best to cover up one's mistakes.

20. a. It is hard to know whether or not a person really likes you.
    b. How many friends you have depends upon how nice a person you are.

21. a. In the long run the bad things that happen to us are balanced by the good ones.
    b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22. a. With enough effort we can wipe out political corruption.
    b. It is difficult for people to have much control over the things politicians do in office.

23. a. Sometimes I can't understand how teachers arrive at the grades they give.
    b. There is a direct connection between how hard I study and the grades I get.

24. a. A good leader expects people to decide for themselves what they should do.
    b. A good leader makes it clear to everybody what their jobs are.

25. a. Many times I feel that I have little influence over the things that happen to me.
    b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. a. People are lonely because they don't try to be friendly.
    b. There's not much use in trying too hard to please people, if they like you, they like you.

27. a. There is too much emphasis on athletics in school.
    b. Team sports are an excellent way to build character.

28. a. What happens to me is my own doing.
    b. Sometimes I feel that I don't have control over the direction my life is taking.

29. a. Most of the time I can't understand why politicians behave the way they do.
    b. In the long run the people are responsible for bad government on a national as well as on a local level.

1. Age____

2. Grade in school *(if applicable)*____

3. Sex: ☐ Male ☐ Female

4. Marital status: ☐ Single ☐ Married ☐ Widowed, or other

5. Your Annual Earnings: ☐ None ☐ Under $2000 ☐ 2000 to 5000 ☐ 5000 to 10000 ☐ 10000 to 15000 ☐ Over 15000

6. Which category best describes your occupation?

☐ Student
☐ Homemaker
☐ Self-employed, farmer, etc.
☐ Laborer
☐ Technician, craftsman, etc.
☐ Sales, clerical, etc.
☐ Manager, administrator, etc.
☐ Teacher, social worker, etc.
☐ Doctor, lawyer, etc.
☐ Not employed.

Use the following categories in answering question 7. Write the appropriate letter in each box.

A. Some Grade School (grades 1-9)
B. Grade School graduate
C. Some High School
D. High School graduate
E. Some Trade or Technical School
F. Trade or Technical School graduate
G. Some college
H. College graduate
I. Some University
J. University graduate.

7. What is the highest level of training completed by:

a. Yourself? ☐ b. Your father? ☐ c. Your mother? ☐

8. How would you describe the community in which you live?

☐ Rural ☐ Village ☐ Town ☐ Suburb ☐ City

9. What is the population of the community in which you live?

☐ Under 1000 ☐ 1000 to 5000 ☐ 5000 to 10000 ☐ 10000 t0 50000 ☐ 50000 to 100000 ☐ 100000 to 500000

10. How many times have you moved in the past year?

☐ None ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 or more

11. How many times have you changed jobs in the past year?

☐ None ☐ 1 ☐ 2 ☐ 3 or more ☐ Does not apply to me

OFFICE USE ONLY

This opinionnaire is part of group: 0 1 2 3 4 5 6 7 8 9

APPENDIX 6

THE ALBERTA CORRESPONDENCE SCHOOL

THE ALBERTA CORRESPONDENCE SCHOOL

by Edna E. Sherk, July 1976

> Education in any society tends to reflect the political philosophy of that society. Under a democracy..., where the state is believed to exist for the welfare of the individual, education must be organized primarily to achieve this end. "All men are created equal"... has important meaning for education in a democratic society.[1]

Special education is usally thought of as education for the child who deviates so far from the average child in intelligence, physical characteristics, the ability to communicate, or cultural background that he can not attain his maximum development in a regular classroom. Special education is offered to give this exceptional child an equal opportunity with other children to obtain an education suited to his needs. The Alberta Correspondence School offers a form of special education for the child whose only exceptionality may be the physical distance between him and the nearest school.

Factors Leading to the Establishment and Growth of the Alberta Correspondence School

Because of Canada'a Immigration policy and the growth of railway transportation, population in the West had increased sharply by the time Alberta became a province in 1905. Most of the new arrivals had settled in groups so that communities of small farms were formed. In such communities there was soon a sufficiently dense population to make the formation of a school district and the building and operation of a school practical, so the schools had been built and when it was possible to get a teacher the young Albertans had been instructed in the three R's, giving them a more or less equal opportunity to get an education.

In the first quarter of this century, however, many families located on the outskirts of settlements in Alberta did not have equality with those in more developed regions in educational opportunities. Often they found themselves too far from established educational services to send their children to classes, and too distant from their neighbours to form school districts of their own. The alternatives the parents faced in educating their children were threefold. They could keep their children at home and tutor them to whatever extent they were willing or able; they could disrupt the family unit by boarding their school-age children in districts with classrooms in operation, or they could move the family closer to a schoolfor all or part of the school term. In families where the parents were well educated, or where finances were not a problem, the children were

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Edna E. Sherk is a teacher at The Alberta Correspondence School.

usually given educational opportunities. However, because some of the families on the fringes of settlements were neither educated nor financially secure, many children were kept at home where they received little or no education.

To provide elementary educational services for children in such circumstances without causing financial hardships for the parents, G. Fred McNally, Provincial Supervisor of Schools, inaugurated Home Study courses to aid the parents who were attempting to educate their children at home. The courses, which were prepared for only the first eight grades, were considered a makeshift or stop-gap measure by the Department of Education. The goal was to offer the children who could not attend regular classrooms, instruction in reading writing, and arithmetic so that when the time came that regular schools were available for them, the children would be able to function satisfactorily in grades appropriate to their ages.[2]

Over 100 families registered their children for correspondence courses in 1923, the first year the courses were offered. Under parental supervision, the pupils followed the instructions mailed to them from Edmonton and sent their completed lessons back to Edmonton where they were corrected by qualified teachers. In the years that followed, enrolment in the Home Study Program grew rapidly. In its second year of operation, the program had 350 students enrolled, and by 1925, 700 students were taking correspondence courses, with 500 of them making satisfactory progress.[3] Their work was organized and directed by Mrs. Sievwright, who, according to McNally was doing an excellent job.[4] As settlements in Alberta spread farther from established centres, there continued to be an increasing number of children who depended on the service.

By 1932, drought and depression were disrupting progress in Alberta and, regardless of the fact the teachers were now in good supply, many districts had to close their schools because they could no longer afford to pay a modest salary to a teacher. By this time, the Correspondence School was considered an integeral part of the educational life of the province.[5] Its enrolment reached 800 as schools were closed for all or parts of the term. It was also found advisable, at this time, to add to the correspondence rolls some pupils whose lack of suitable clothing made it impossible for them to attend regular classes during the winter months. For the first time, during the depression, the province made courses available to high school students. Although these courses were not written or marked at the Correspondence School, and were sold and not given to the students, 368 students enrolled in these courses the first year. This was the forerunner of what was to become the Correspondence School Branch's High School in later years.[6] Other events during the depression that encouraged the growth of the school included the provision by the Department of Education which made it legal for school boards to pay the Correspondence School's tuition fee for High School Courses,[7] and the 1939 regulation which required Grade X and Grade XI students to either attend regular classes or take correspondence courses if they wished to get credit toward a High School Diploma. According to Deputy Minister of Education McNally, because of these measures the high school enrolment increased by five times the previous number of students.[8]

There were, however, other changes taking place in Alberta and the world that brought about changes for the school as the depression was grinding to a halt, war clouds loomed on the horizon. The war years with their improved employment picture and enlistments changed the picture of teacher employment in Alberta. The surplus of teachers which had developed during the depression disappeared. The call to arms or to essential industries took many young teachers out of the schools. Many schools were unable to find teachers. Thousands of Alberta children who had no teachers continued to attend their regular classrooms, usually multi-grade schools, where they studied from correspondnece courses under the supervision of untrained personnel. The exercises done in these Supervised Centres were sent to Edmonton weekly, where they were marked and graded by qualified teachers. This heavy enrolment in correspondence courses continued until 1950 when, with the easing of the teacher shortage, classrooms were again staffed with certified personnel. or small schools were joined to others at centralized locations where one teacher could teach the students from several districts, and enrolments in the elementary grade at the Correspondence School declined to more normal levels.

In 1939, the Correspondence School was reorganized under a new director, J. Chalmers, who began the addition of a complete high school program by introducing Grade 9 courses that year, and Grade 10 the following year. The staff increased from four teachers doing elementary work, and four at the intermediate and high school levels that year to sixteen full time teachers in 1940. That was also the year that a reference library for the use of the students was added to the school's services. Although these courses were intended primarily for students in unorganized territory, those who lived excessive distances from schools offering high school instruction, and those who were excused from classes for medical reasons, they were also used by many students attending small high schools who required courses not offered in their schools, or who desired options the teacher was not qualified to teach. As well, senior students in multi-grade classrooms, and youths and adults not registered in any school, but who wished to improve their academic standing, registered for correspondence courses. In 1940, the Alberta school cooperated with other correspondence schools in Canada to provide high school up-grading services for the Canadian Legion Educational Services.[9]

With the increased activities of the school, the number of teachers grew. By 1941, there were thirty teachers on staff, most of whom were engaged in writing and revising high school courses and providing marking services for 3,229 high school students as well as 543 students enrolled in the Legion' program. The elmentary and intermediate enrolment, at this time was fairly stable with just over 650 students enrolled in each section.[10] 1944 proved to be an important year for the Correspondence

School, as it was that year it was moved from crowded and unsatisfactory quarters in the Terrace Building to the roomier building at its present location on Stony Plain Road and 122 Street. The roomier quarters were needed to house the ever increasing staff of teachers, clerks, typists, printers and shippers needed to serve the student of the school.[11]

Graph I shows the enrolement at the Correspondence School from 1932 to 1973. These statistics are from reports of Supervisiors of Schools and High School Inspectors up to and including 1938. From 1939 to 1973 they are taken from the reports of the Directors of the Correspondence School.

Classification of Students Presently Enrolled in Correspondence Courses

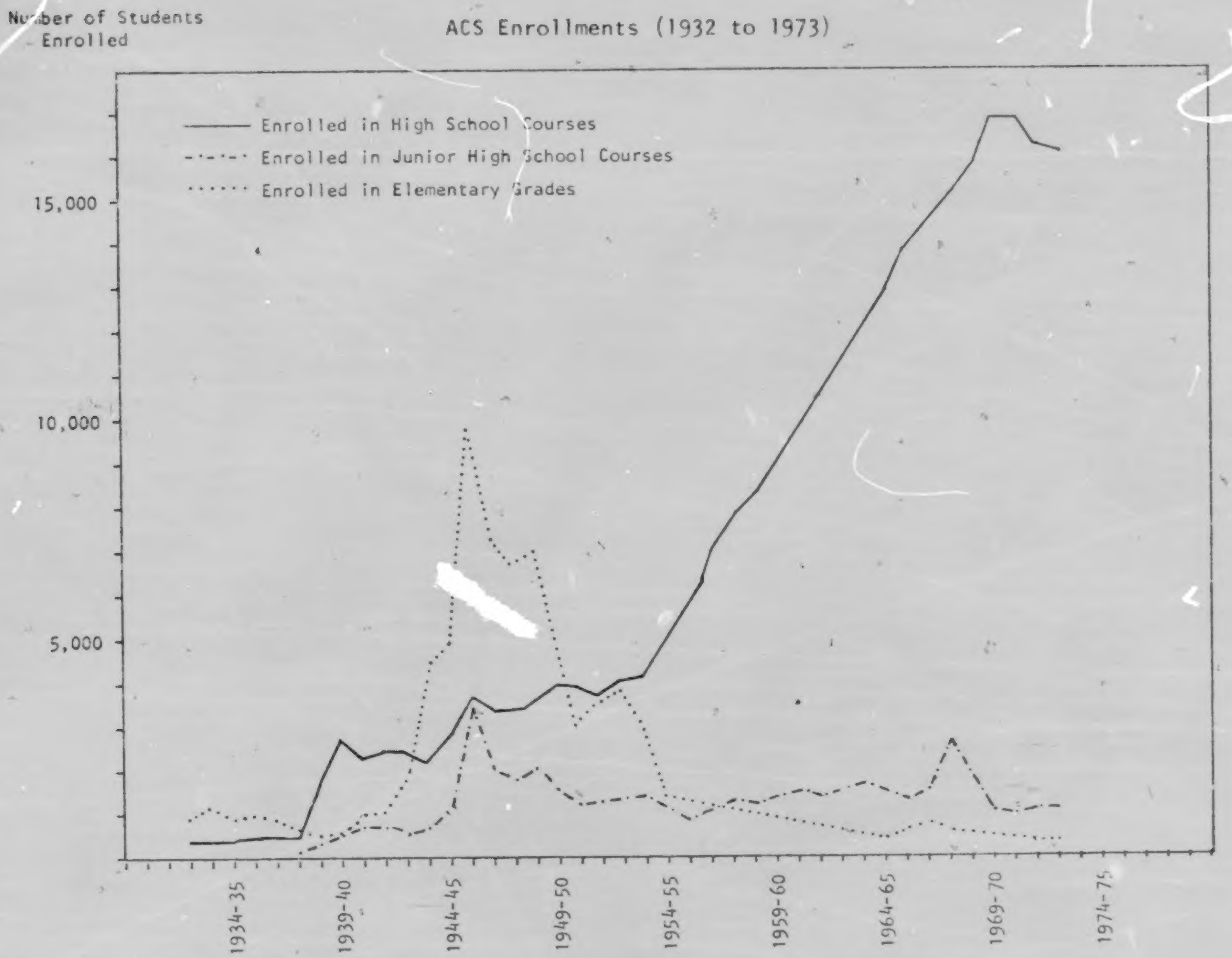
The recent rapid increase in the number of students enrolled in high school courses, as shown on Graph I, represents many youths and adults who have left school but who are still working toward a diploma or matriculation standing, or are taking courses to improve their general knowledge. There are also those in regular attendance at a school who are taking one or more subjects by correspondence. Students in Rehabilitative Institutions enrol primarily in high school courses, although a few of them are enrolled in junior high programs. The portion of the enrolment in each classification varies from year to year, but roughly one half of those enrolled in high school courses are also in attendance at schools. For example, in the 1972-73 school year, out of the 16,363 students taking courses at the high school level, 8,617 were enrolled in regular schools in Alberta, 694 were in prisons or mental instituions, and 655 were living outside Alberta. The rest were youths and adults living in the province and registered at no other school.[12]

For students in elementary and junior high school grades, lower enrolments at the Correspondence School, since the peak years between 1942 and 1950, represent the return to normal provisions for these grades through out the province. However, after more than seventy years of growth and development in Alberta, there are still children living in unorganized territory, on isolated farms and ranches, at lumber camps, or in other regions where schools are not operated. Graph II shows further classifications of students served by the Alberta Correspondence School.

The students in schools or supervised centres attend multigrade classrooms. In schools, usually only the students in the sixth to ninth grades use correspondence courses, while the lower grades are taught by the classroom teacher. Supervised centres have all the children from the first to the ninth grades enrolled for correspondence courses, with a non-certified adult serving as supervisor. Except for a few isolated multigrade schools, such as those at Meander River and Conklin, most such classrooms are attended by Hutterite or Mennonite children. Since, among the Hutterite children in particular, English is their second language and very little of it is usually spoken outside the classroom, their unfamiliarity with the language of instruction causes many of these children to experience more than the average amount of difficulty with their lessons. While most

Graph 1

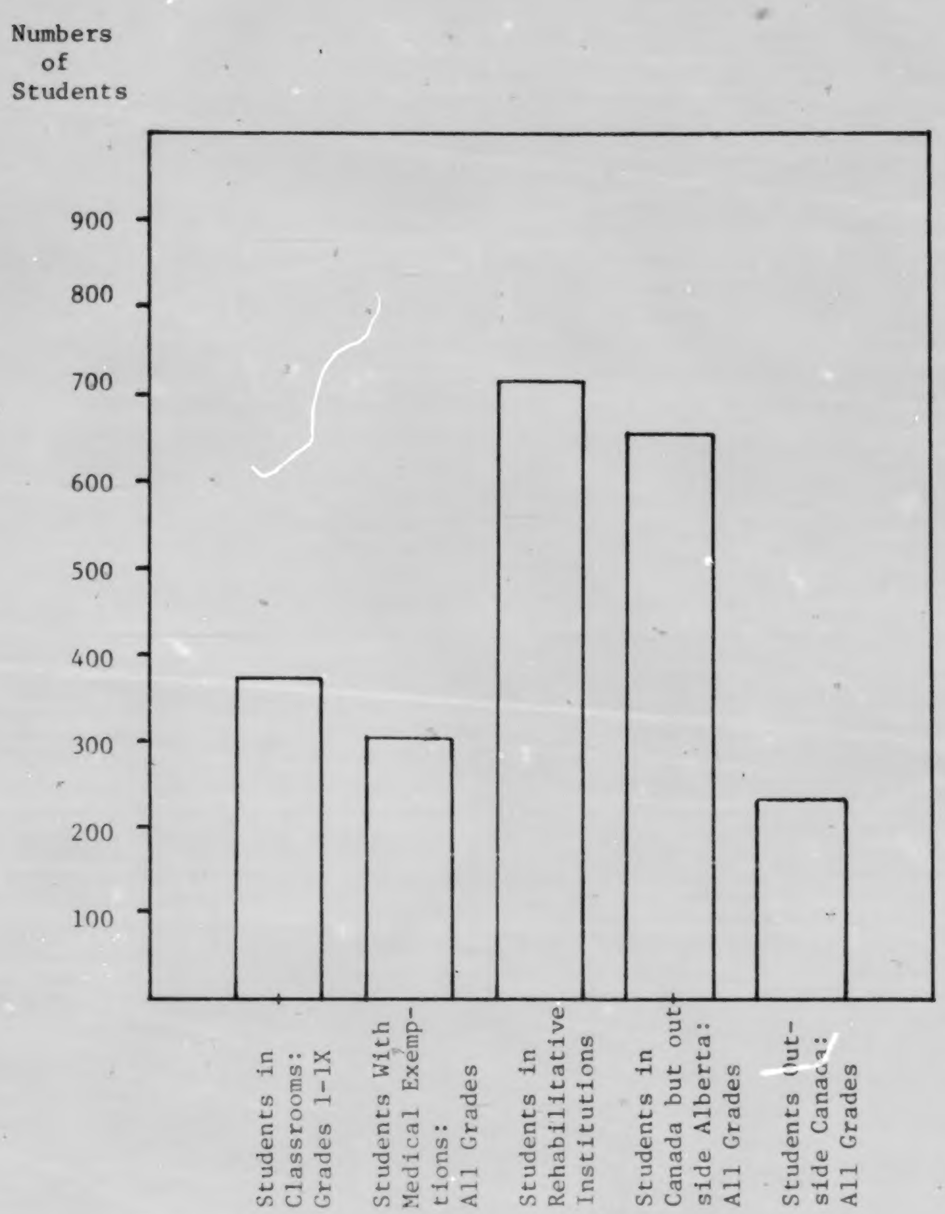
ACS Enrollments (1932 to 1973)



Source: Annual Reports of the
Department of Education,
Province of Alberta,
1933-1973

Graph 11

Classification of Special Students Served by the ACS (Averages for the period 1968-1973)



Source: Annaul Reports of the Department of Education of the Province of Alberta, 1968-1973.

of them write fluent, grammatical English by the time they reach the seventh grade, many are still struggling with English syntax at the end of their ninth year in school. However, there appears to be no appreciable difference in the language ability of the ones who are on correspondence courses during the lower grades and the ones who are taught those grades by the classroom teacher.

Motivation to learn the subject matter offered by correspondence lessons is not usually high among these students; their life style is rooted in their religion and they consider much of what they are expected to learn either irrelevant or hostile to their way of life. However, most of them do complete the eighth grade and many have been successful in ninth grade work. Since they have normally reached the age when school attendance is no longer compulsory by the time they have finished the ninth grade, very few Hutterite children enrol in high school courses. Mennonite children take high school courses by correspondence, attend a local high school, or drop out of school at the end of the ninth grade. It is possible, however, that both these groups of children might remain in school longer if they were offered courses, by correspondence of otherwise, which they and their parents considered practical.

The number of students enrolled in correspondence courses for medical reasons varies from year to year. Many of these students need the services of the school for less than a full school year. These short term students include pregnant girls and children with emotional or other medical problems which make school attendance difficult for a few months. For the most part, these students are able to continue in their regular classes when they return to school. Home study enables them to complete their normal school year's work. There are also students with chronic conditions who are confined to their homes or to hospitals because of their sickness. By having corresponsence lessons, they are able to work at their own rate and are spared the frustration of falling farther and farther behind their age-group at school. In most cities, children in this group are usually visited on a regular basis by a visiting teacher who is employed by the local school authority. Although this teacher provides special help for the student as it is needed, the lessons are marked and graded by the child's correpondence teacher.

The students who reside outside Canada and take courses by correspondence usually expect to be outside the country for one or more years, but intend to return to Alberta to complete their education. For this reason, as well as the fact that they may not know the language of instruction in many regions, it is deemed wise to have them follow the Alberta curriculum for their grades while they are away.

Special Services Offered by the Alberta Correspondence School

A visiting teacher from the Correspondence School makes personal contact with as many students as possible each year. Visits were first made primarily to children in multi-grade schools or supervised centres, invalids, those in isolated regions and those in hospitals. The first visiting teacher, Miss Evelyn Harkness, made only one trip each year to see as many students as possible. Since the inception of the service it has been extended to include students who are in prison, students enrolled in high schools, and adult students. Special help with lessons is given during these visits, and the teachers at the Correspondence School are alerted to any special conditions in the home or school that may be affecting the quality of the student's work. Since 1974, the service has been increased. There are now two or three teachers, besides the regular visiting teacher, who go on the road each fall and each spring. The number of such personal contacts between 1969 and 1973 ranged between 330 and 550 yearly, but in 1974, with more teachers making visits, approximately 1,100 students were contacted.[13]

Although the Correspondence School teachers had been involved in preparing radio programs for their students in the early 1940's, the service had been discontinued for several years. During the 1970-71 school year, however, the service was once more in use with an open-line, phone-in radio series which was used to supplement regular courses in mathematics, social studies and English. Television was used to offer a course in automotives at the high school level, and a course in electronics was prepared for use the following year. French, Spanish, German and Urainian courses were given a language laboratory approach through the use of cassettes and tapes. Summer School courses are offered for high school students each year during July and August. Extra teachers are hired for those months to ensure prompt marking service. Sixteen extra teachers were hired in the summer of 1974 to help with the grading of papers for 1,235 summer students.[14]

The reference library which was opened in 1940 is still in operation. Both reference and leisure reading materials are available from this library for students who do not have access to school libraries. Over 1,500 books were added to the book shelves during the 1974-75 school term and more than 7,500 books were loaned to students.[15]

Students are encouraged to visit the school or phone their teachers when in Edmonton. Many students visit the school, either for help with studies or just to make personal contact with their teachers. Elementary students receive birthday cards and greetings on other special days as well as friendly letters from their teachers during the school year. A newsletter is sent out to elementary students each spring. This contains samples of work by most of the children as well as some information about each child.

Strengths and Weaknesses of Correspondence School Education

According to Chalmers, there are both advantages and disadvantages for the student taking his education by correspondence. Since, otherwise, he would probably attend a multi-grade school with an unspecialized teacher, he may be better served by taking correspondence courses, for each teacher is a specialist in his teaching area. The instructions and comments on each lesson, which are personal and individual, should also prove of value to the student. Another advantage, particularly for the student who works and learns more slowly than the average child, is the lack of pressure to reach the same level of achievement in the same length of time as more able students. Each student progresses to his own level, at his own speed, with some students being encouraged to do extra reading and research in their own fields of interest, while others are advised to work for two years at one grade level. Self reliance and self discipline, both of which are necessary for academic success through correspondence courses, are encouraged in students at all levels. On the other hand, the student faces many disadvantages when he does not have regular classroom experiences. He is denied variety in the presentation of his lesson materials. He must read and follow instructions, but lacks the guidance, encouragement, inspiration, and the immediate reinforcement or assistance that are available to the student in the classroom. There is restricted opportunity for the social development of the child, and growth in spoken language is limited by the lack of vocal-auditory situations. Visual aids such as movies, slides and collections are missing from his educational experiences.[16]

The academic achievements of students of the Alberta Correspondence School, over the years, have been satisfactory. Statistics on the pass and fail records of the students, however, have not been published on a regular basis. In 1934, McNally reported that a follow up on students who had been doing correspondence lessons showed that without exception they carried forward into the classroom the good study habits they had learned while studying at home.[17] Newland, in 1938, claimed that examination results showed that this method of education was a success for the students who were highly motivated to get an education.[18] In 1944, Chalmers reported that 531 candidates sat for the Grade XII examinations, with 86.8% making passing grades.[19] Out of 5,421 students enrolled in high school courses in 1957, although only 2,088 wrote the departmental examinations, Bruce reported the following results: H standing - 9%, A standing - 43%, B standing - 36%, and C standing - 7%.[20]

Possible Future Prospects for the Alberta Correspondence School

Although originally the Correspondence School was intended only for the elementary grades, the present enrolment of elementary students is a small fraction of the total enrolment of the school. The school, in the years since its inauguration, has expanded to provide services for senior students and adults as the need for these services became evident. The present emphasis appears to be on continuing education, but the school has already demonstrated that it is capable of making adjustments to accommodate increased enrolments at any grade level. It seems to the present writer that, until the ideal of regular classroom instruction for every school-age child in Alberta is reached, the Alberta Correspondence School will continue to fill a need in the educational life of the province.

FOOTNOTES

[1] S. A. Kirk, Educating Exceptional Children (2nd Ed.). (Boston: Houghton Mifflin Company, 1972), p.3.

[2] G. Fred McNally, The Annual Report of the Department of Education of the Province of Alberta, (Edmonton: The King's Printer, 1923), p.3.

[3] G. Fred McNally, The annual Report of the Department of Education of the Province of Alberta, (Edmonton: The King's Printer, 1925), p.25.

[4] G. Fred McNally, The Annual Report of the Department of Education of the Province of Alberta, (Edmonton: The King's Printer, 1929), p.20

[5] G. Fred McNally, The Annual Report of the Department of Education of the Province of Alberta, (Edmonton: The King's Printer, 1932), p.18

[6] G. Fred McNally, The Annual Report of the Department of Education of the Province of Alberta, (Edmonton: The King's Printer, 1933), p.18

[7] R. V. Bellamy, The Annual Report of the Department of Education of the Province of Alberta, (Edmonton: The King's Printer, 1935), pp. 27-28.

[8] G. Fred McNally, The Annual Report of the Department of Education of the Province of Alberta, (Edmonton: The King's Printer, 1939), pp.8-9.

[9] J. W. Chalmers, The Anuual Report of the Department of Education of the Province of Alberta, (Edmonton: The King's Printer, 1940), pp.47-51

[10] J. W. Chalmers, The Annual Report of the Department of Education of the Province of Alberta, (Edmonton: The King's Printer, 1941), pp.51-56

[11] J. W. Chalmers, The Annual Report of the Department of Education of the Province of Alberta, (Edmonton: The King's Printer, 1944), pp.35-39

[12] B. Figur, The Annual Report of the Department of Education of the Province of Alberta, (Edmonton: The Queen's Printer, 1973) pp. 103-105

[13] B. Figur, The Annual Report of the the Department of Education of the Province of Alberta, (Edmonton: The Queen's Printer, 1975), p.122

[14] Ibid., p. 124

[15] Ibid., p. 123

[16] Chalmers, op. cit., 1941, pp. 47-51

[17] G. Fred McNally, The Annual Report of the Department of Education of the Province of Alberta, (Edmonton: The King's Printer, 1934), p. 18

12

[18] H. C. Newland, The Annual Report of the Department of Education of the Province of Alberta, (Edmonton: The King's Printer, 1938), pp. 37-38

[19] Chalmers, op. cit., 1944, p. 38

[20] G. F. Bruce, The Annual Report of the Department of Education of the Province of Alberta, (Edmonton: The Queen's Printer, 1957) pp. 86-91

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APPENDIX 7

THE ACS PROGRAM OF INSTRUCTION

ACS PROGRAM

Regular Senior High School Courses

	Grade X
1100	English 10 (5)
1115	English 13 (5)
1300	French 10 (5)
1315	German 10 (5) (A-L M)
1315	German 10 (5) (Verstehen and Sprechen)
1325	Latin 10 (5)
1344	Spanish 14 (5)
1355	Ukrainian 10 (5)
1200	Mathematics 10 (5)
1216	Mathematics 13 (5)
1225	Mathematics 15 (5)
1230	Biology 10 (3)
1240	Chemistry 10 (3)
1260	Physics 10 (3)
1280	Science 11 (3)
1280	Science 11 (5)
1800	Agriculture 10 (4) or (5)
1150	Social Studies 10 (5)
1415	Health and Personal Development 10 (2) or (3)
1415	Health and Personal Development 10 (4) or (5)
1435	Occupations 10 (2) or (3)
1400	Art 10 (3)
1400	Art 10 (4) or (5)
1426	Music 12 (3)
1426	Music 12 (4) or (5)
1601	Clothing and Textiles 10 (4) or (5)
1611	Food Science 10 (4) or (5)
1621	Modern Living 10 (4) or (5)
1715	Drafting 10 (3)
1715	Drafting 10 (4) or (5)
1726	General Technology 10 (4) or (5)
1996	Electronics 10 (4) or (5) (Includes T.V.)
1731	Electricity 12 (5)
1997	Automotives 12 (5) (Includes T.V. option)
1836	Building Construction 12 (5)
1916	Horticulture 12 (5)
1501	Accounting 10 (3)
1550	Record Keeping 10 (3)
1550	Record Keeping 10 (5)
1537	Business Foundations 10 (3)
1537	Business Foundations 10 (5)
1565	Typewriting 10 (3)
1565	Typewriting 10 (5)
1999	Special Projects 10
1998	General Technology

Grade XI

2110	English 20 (5)
2115	English 23 (5)
2141	Communications 21 (3)
2143	Literature 21 (3)
2300	French 20 (5)
2315	German 20 (5)
2325	Latin 20 (5)
2355	Ukrainian 20 (5)
2200	Mathematics 20 (5)
2216	Mathematics 23 (5)
2225	Mathematics 25 (5)
2230	Biology 20 (3)
2240	Chemistry 20 (3)
2240	Chemistry 20 (5)
2260	Physics 20 (3)
2275	Physics 22 (3)
2150	Social Studies 20 (5)
2165	Geography 20 (3)
2165	Geography 20 (5)
2170	Psychology 20 (3)
2170	Psychology 20 (4) or (5)
2175	Sociology 20 (4) or (5)
2400	Art 20 (3)
2400	Art 20 (4) or (5)
2501	Accounting 20 (3)
2525	Business Procedures 20 (5)
2525	Clerical Practice 20
2430	Law 20 (3)
2430	Law 20 (5)
2540	Marketing 20 (5)
2540	Merchandising 20
2528	Data Processing 20 (5)
2565	Typewriting 20 (5)
2555	Shorthand 20 (5) (Forkner)
2555	Shorthand 20 (5) (Gregg)
2555	Shorthand 20 (5) (Pitman)
2999	Special Projects 20
2998	General Technology

Grade XII

3100	English 30 (5)
3115	English 33 (5)
3312	French 30 (5)
3315	German 30 (5)
3325	Latin 30 (5)
3365	Ukrainian 30 (5)
3200	Mathematics 30 (5)
3211	Mathematics 31 (5)
3216	Mathematics 33 (5)
3230	Biology 30 (5)

Grade XII (cont)

3240	Chemistry 30 (5)
3260	Physics 30 (5)
3275	Physics 32 (5)
3150	Social Studies 30 (5)
3180	Economics 30 (5)
3400	Art 30 (5)
3501	Accounting 30 (5)
3545	Office Procedures 30 (5)
3537	Business Foundations 30 (5)
3555	Shorthand 30 (5) (Pitman)
3555	Shorthand 30 (5) (Gregg)
3555	Shorthand 30 (5) (Forkner)
3555	Shorthand 31 (5) (Forkner)
3999	Special Projects 30 (5)
3998	General Technology (4,5)

Special Preparatory Courses
(These are non-credit courses)

4001	English for Adults 1
4002	English for Adults 2
4003	Mathematics for Adults 1
4004	Mathematics for Adults 2
4005	Basic Algebra and Geometry
4006	Practical Mathematics Series Modules 1-5 (Junior High School Level) Individual modules (Senior High School Level or Junior High School Level)

Special Adult Courses (Senior High School)
(See the Adult Supplement for course descriptions)

4007	Mathematics 30A (5) Lessons A-J only (no credits)
4008	English 30A (5) Lessons A-F only (no credits)
4009	Biology 30A (5) Lessons A-J only (no credits)
4010	Physics 30A (5) Lessons A-J only (no credits)
4011	Chemistry 30A (5) Lessons A-J only (no credits)
4012	German 30A (5) Lessons A-J only (no credits)
4013	French 30A (5) Lessons A-J only (no credits)

Special Interest Courses

4014	Accident Prevention Module 1: Traffic Safety Module 2: Home Safety

Special Interest Courses (cont)

4015	Anthropology
	Module 1: Introduction to Anthropology
	Module 2: The Ways of Man
4016	Astronomy
	Module 1: Introduction to Astronomy
4017	Basic Grammer for Adults
4018	Business Management for Adults
4019	Forestry
	Module 1: The Forest
	Module 2: The Tree
	Module 3: Forest Products
4020	International Cuisine
	Module 1: European Cuisine - The Art of French Cooking
	Module 2: The Art of Making and Selecting Wines
	Module 3: Italian Cuisine
4021	Know Alberta
	Module 1: Prehistory of Alberta
	Module 2: The Native Peoples
	Module 3: Settlement of Alberta
	Module 4: Geography of Alberta
	Module 5: Provincial Government
	Module 6: Municipal Government
4022	Letter-Writing
4023	Library Services and Facilities
	Module 1: Technical and Mechanical Procedure
	Module 2: Non-book Materials
	Module 3: Lubrary Materials
	Module 4: Library Management
4024	Metrication
4025	Mythology
	Module 1: Roman and Greek Gods
	Module 2: Norse and Germanic Gods
	Module 3: Gods of the Americas
4026	Psychology 20 Modules
	Module 1: The Self
	Module 2: Mental Health
	Module 3: Problems in a Transitional World
	Module 4: Studies in Change
	Module 5: What is Learning?
4027	Personal Development
	Infancy and the Early Years
	Children and Language Development
4028	Spelling Practice
4029	The Story of Mathematics
4030	Photography
	Module 1: Camera Use
4031	Servicing Small Appliances
	Module 1: Resistance Appliances
4032	Rhetoric
4033	Computer Technology

Retroactive Credits (Senior High School)

5000	Mathematics 20 (10)
5001	Chemestry 20 (6)
5002	Physics 20 (6)
5003	Biology 20 (6)
5004	French 20 (10)
5005	German 20 (10)
5006	Latin 20 (10)
5007	Ukrainian 20 (10)
5008	Typewriting 20 (10)
5009	Accounting 20 (6)
5010	English 30 or 30A (15)
5011	English 33 (15)
5012	Social Studies 30 (15)
5013	Mathematics 30 or 30A (15)
5014	Mathematics 31 (5) or (15) if presented in preference to Mathematics 30
5015	Chemistry 30 or 30A (11)
5016	Physics 30 or 30A (11)
5017	Biology 30 or 30A (11)
5018	French 30 or 30A (15)
5019	German 30 or 30A (15)
5020	Latin 30 (15)
5021	Ukrainian 30 (15)
5022	Accounting 30 (11)

APPENDIX 8

COST-BENEFIT CALCULATIONS

STATUS QUO

Discount Rate 3%

Category	Males				Females							
	(Nm	× Prob of Completion	× Earnings Diff)	+ (Nf	× Prob of Completion	× Earnings Diff)	− (NT	+ Accounting Costs	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	8835	1065	0.95	792	1784	1346	—	25	228	3348200
=30cr	599	0.85	8835	888	0.95	792	1487	1615	—	30	273	2314405
=35cr	513	0.85	8835	761	0.95	792	1274	1384	—	35	319	1573866
In-school/ACS [1]												
FTE=25cr	719	0.69	8835	1065	0.77	792	1784	1315	7	34	160	2328067
=30cr	599	0.71	8835	888	0.80	792	1487	1585	7	39	205	1529542
=35cr	513	0.73	8835	761	0.82	792	1274	1354	7	44	251	1056099
In-school/ACS [2]												
FTE=25cr	719	0.31	8835	1065	0.35	792	1784	1244	22	55	—	92213
=30cr	599	0.31	8835	888	0.35	792	1487	1493	27	66	—	471657
=35cr	513	0.31	8835	761	0.35	792	1274	1742	31	77	—	740921
Out of School												
FTE=25cr	719	0.15	11286	1065	0.22	924	1784	1244	22	55	—	922976
=30cr	599	0.15	11286	888	0.22	924	1487	1493	27	66	—	1163322
=35cr	513	0.15	11286	761	0.22	924	1274	1742	31	77	—	1333746

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence

STATUS QUO

Discount Rate 5%

	Males			Females								
Category	(Nm	× Prob of Completion	× Earnings Diff)	+ (Nf	× Prob of Completion	× Earnings Diff)	− (NT	+ Accounting Costs	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	3968	1065	0.95	439	1784	1346	—	25	228	16585
=30cr	599	0.85	3968	888	0.95	439	1487	1615	—	30	273	-461418
=35cr	513	0.85	3968	761	0.95	439	1274	1884	—	35	319	-803591
In-school/ACS[1]												
FTE=25cr	719	0.69	3968	1065	0.77	439	1784	1315	7	34	160	-357978
=30cr	599	0.71	3968	888	0.80	439	1487	1585	7	39	205	-730716
=35cr	513	0.73	3968	761	0.82	439	1274	1854	7	44	251	-986823
In-school/ACS[2]												
FTE=25cr	719	0.31	3968	1065	0.35	439	1784	1244	22	55	—	-1308599
=30cr	599	0.31	3968	888	0.35	439	1487	1493	27	66	—	-1485123
=35cr	513	0.31	3968	761	0.35	439	1274	1742	31	77	—	-1608941
Out of School												
FTE=25cr	719	0.15	5895	1065	0.22	565	1784	1244	22	55	—	-1588509
=30cr	599	0.15	5895	888	0.22	565	1487	1493	27	66	—	-1718338
=35cr	513	0.15	5895	761	0.22	565	1274	1742	31	77	—	-1808687

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence

STATUS QUO

Discount Rate 7%

Category	Males				Females								
	(Nm	× Prob of Completion	× Earnings Diff)	+	(Nf	× Prob of Completion	× Earnings Diff)	− (NT	+ Accounting Costs	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school													
FTE=25cr	719	0.85	1885		1065	0.95	268	1784	1346	—	25	228	-1429449
=30cr	599	0.85	1885		888	0.95	268	1487	1615	—	30	273	-1666233
=35cr	513	0.85	1885		761	0.95	268	1274	1884	—	35	319	-1835507
In-school/ACS[1]													
FTE=25cr	719	0.69	1885		1065	0.77	268	1784	1315	7	34	160	-1549603
=30cr	599	0.71	1885		888	0.80	268	1487	1585	7	39	205	-1738073
=35cr	513	0.73	1885		761	0.82	268	1274	1854	7	44	251	-1873593
In-school/ACS[2]													
FTE=25cr	719	0.31	1885		1065	0.35	268	1784	1244	22	55	—	-1836619
=30cr	599	0.31	1885		888	0.35	268	1487	1493	27	66	—	-1925062
=35cr	513	0.31	1885		761	0.35	268	1274	1742	31	77	—	-1935747
Out of School													
FTE=25cr	719	0.15	3246		1065	0.22	375	1784	1244	22	55	—	-1918720
=30cr	599	0.15	3246		888	0.22	375	1487	1493	27	66	—	-1993469
=35cr	513	0.15	3246		761	0.22	375	1274	1742	31	77	—	-2044338

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence

STATUS QUO

Discount Rate 9%

	Males			Females								
Category	(Nm	× Prob of Completion	× Earnings Diff)	+ (Nf	× Prob of Completion	× Earnings Diff)	– (NT	+ Accounting Costs	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	960	1065	0.95	178	1784	1346	—	25	228	-2085821
=30cr	599	0.85	960	888	0.95	178	1487	1615	—	30	273	-2213121
=35cr	513	0.85	960	761	0.95	178	1274	1884	—	35	319	-2303919
In-school/ACS [1]												
FTE=25cr	719	0.69	960	1065	0.77	178	1784	1315	7	34	160	-2082310
=30cr	599	0.71	960	888	0.80	178	1487	1585	7	39	205	-2195402
=35cr	513	0.73	960	761	0.82	178	1274	1854	7	44	251	-2276158
In-school/ACS [2]												
FTE=25cr	719	0.31	960	1065	0.35	178	1784	1244	22	55	—	-2076340
=30cr	599	0.31	960	888	0.35	178	1487	1493	27	66	—	-2124797
=35cr	513	0.31	960	761	0.35	178	1274	1742	31	77	—	-2156821
Out of School												
FTE=25cr	719	0.15	1905	1065	0.22	269	1784	1244	22	55	—	-2089183
=30cr	599	0.15	1905	888	0.22	269	1487	1493	27	66	—	-2134666
=35cr	513	0.15	1905	761	0.22	269	1274	1742	31	77	—	-2165274

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence

STATUS QUO

Discount Rate 11%

	Males			Females								
Category	(Nm	× Prob of Completion	× Earnings Diff)	+ (Nf	× Prob of Completion	× Earnings Diff)	− (NT	+ Accounting Costs	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	529	1065	0.95	128	1784	1346	—	25	228	-2309814
=30cr	599	0.85	529	888	0.95	128	1487	1615	—	30	273	-2474745
=35cr	513	0.85	529	761	0.95	128	1274	1884	—	35	319	-2528904
In-school/ACS[1]												
FTE=25cr	719	0.69	529	1065	0.77	128	1784	1315	7	34	160	-2337135
=30cr	599	0.71	529	888	0.80	128	1487	1585	7	39	205	-2414222
=35cr	513	0.73	529	761	0.82	128	1274	1854	7	44	251	-2469764
In-school/ACS[2]												
FTE=25cr	719	0.31	529	1065	0.35	128	1784	1244	22	55	—	-2191043
=30cr	599	0.31	529	888	0.35	128	1457	1493	27	66	—	-2220370
=35cr	513	0.31	529	761	0.35	128	1274	1742	31	77	—	-2238680
Out of School												
FTE=25cr	719	0.15	1205	1065	0.22	206	1784	1244	22	55	—	-2173439
=30cr	599	0.15	1205	888	0.22	206	1487	1493	27	66	—	-2209869
=35cr	513	0.15	1205	761	0.22	206	1274	1742	31	77	—	-2229687

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence

IMPROVED COMPLETION RATES .

Discount Rate 3%

	Males			Females								
Category	(Nm	× Prob of Completion	× Earnings Diff)	+ (Nf	× Prob of Completion	× Earnings Diff)	− (NT	+ Accounting Costs	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	8835	1065	0.95	792	1784	1346	—	25	228	3346200
=30cr	599	0.85	8835	888	0.95	792	1487	1615	—	30	273	2314405
=35cr	513	0.85	8835	761	0.95	792	1274	1884	—	35	319	1573866
In-school/ACS [1]												
FTE=25cr	719	0.78	8835	1065	0.88	792	1784	1315	7	34	160	2992563
=30cr	593	0.79	8835	888	0.89	792	1487	1585	7	39	205	2076612
=35cr	513	0.80	8835	761	0.90	792	1274	1854	7	44	251	1421581
In-school/ACS [2]												
FTE=25cr	719	0.62	8835	1065	0.70	792	1784	1244	22	55	—	2172238
=30cr	599	0.62	8835	888	0.70	792	1487	1493	27	66	—	1415058
=35cr	513	0.62	8835	761	0.70	792	1274	1742	31	77	—	875059
Out of School												
FTE=25cr	719	0.30	11286	1065	0.44	924	1784	1244	22	55	—	510713
=30cr	599	0.30	11266	883	0.44	924	1487	1493	27	66	—	30737
=35cr	513	0.30	11286	761	0.44	924	1274	1742	31	77	—	-310592

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence

IMPROVED COMPLETION RATES

Discount Rate 5%

Category	Males: Nm	× Prob of Completion	× Earnings Diff	+ Females: Nf	× Prob of Completion	× Earnings Diff	− (NT	+ Accounting Costs	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	3968	1065	0.95	439	1784	1346	—	25	228	-14555
=30cr	599	0.85	3968	888	0.95	439	1487	1615	—	30	273	-461416
=35cr	513	0.85	3968	761	0.95	439	1274	1884	—	35	319	-803591
In-school/ACS [1]												
FTE=25cr	719	0.78	3968	1065	0.88	439	1784	1315	7	34	160	-47779
=30cr	599	0.79	3968	888	0.89	439	1487	1585	7	39	205	-595454
=35cr	513	0.80	3968	761	0.90	439	1274	1854	7	44	251	-817506
In-school/ACS [2]												
FTE=25cr	719	0.62	3968	1065	0.70	439	1784	1244	22	55	—	-262511
=30cr	599	0.62	3968	888	0.70	439	1487	1493	27	66	—	-611546
=35cr	513	0.62	3968	761	0.70	439	1274	1742	31	77	—	-860363
Out of School												
FTE=25cr	719	0.30	5895	1065	0.44	565	1784	1244	22	55	—	-852354
=30cr	599	0.30	5895	888	0.44	565	1487	1493	27	66	—	-1078294
=35cr	513	0.30	5895	761	0.44	565	1274	1742	31	77	—	-1260475

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence

IMPROVED COMPLETION RATES

Discount Rate 7%

Category	Males			Females								
	(Nm	× Prob of Completion	× Earnings Diff)	+ (Nf	× Prob of Completion	× Earnings Diff)	− (NT	+ Accounting Costs	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	1885	1065	0.95	268	1784	1346	—	25	228	-1429449
=30cr	599	0.85	1885	888	0.95	268	1487	1615	—	30	273	-1666233
=35cr	513	0.85	1885	761	0.95	268	1274	1884	—	35	319	-1835507
In-school/ACS[1]												
FTE=25cr	719	0.78	1885	1065	0.88	268	1784	1315	7	34	160	-1396229
=30cr	599	0.79	1885	888	0.89	268	1487	1585	7	39	205	-1626325
=35cr	513	0.80	1885	761	0.90	268	1274	1854	7	44	251	-1789587
In-school/ACS[2]												
FTE=25cr	719	0.62	1885	1065	0.70	268	1784	1244	22	55	—	-1316575
=30cr	599	0.62	1885	888	0.70	268	1487	1493	27	66	—	-1491742
=35cr	513	0.62	1885	761	0.70	268	1274	1742	31	77	—	-1614593
Out of School												
FTE=25cr	719	0.30	3246	1065	0.44	375	1784	1244	22	55	—	-1460777
=30cr	599	0.30	3246	888	0.44	375	1487	1493	27	66	—	-1628556
=35cr	513	0.30	3246	761	0.44	375	1274	1742	31	77	—	-1731776

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence

IMPROVED COMPLETION RATES

Discount Rate 9%

Category	Males			Females								
	(Nm	× Prob of Completion	× Earnings Diff)	+ (Nf	× Prob of Completion	× Earnings Diff)	− (NT	+ Accounting Costs	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	960	1065	0.95	178	1784	1346	—	25	228	-2085821
=30cr	599	0.85	960	888	0.95	178	1487	1615	—	30	273	-2213121
=35cr	513	0.85	960	761	0.95	178	1274	1884	—	35	319	-2303919
In-school/ACS [1]												
FTE=25cr	719	0.78	960	1065	0.86	178	1784	1315	7	34	150	-1853335
=30cr	599	0.79	960	888	0.88	178	1487	1565	7	39	205	-2136173
=35cr	513	0.80	960	761	0.90	178	1274	1854	7	44	251	-2230646
In-school/ACS [2]												
FTE=25cr	719	0.62	960	1065	0.70	178	1784	1244	22	55	—	-1796016
=30cr	599	0.62	960	888	0.70	178	1487	1493	27	66	—	-1891212
=35cr	513	0.62	960	761	0.70	178	1274	1742	31	77	—	-1956742
Out of School												
FTE=25cr	719	0.30	1905	1065	0.44	269	1784	1244	22	55	—	-1919702
=30cr	599	0.30	1905	888	0.44	269	1487	1493	27	66	—	-1910950
=35cr	513	0.30	1905	761	0.44	269	1274	1742	31	77	—	-1973649

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence

IMPROVED COMPLETION RATES

Discount Rate 11%

	Males				Females									
Category	(Nm	x Prob of Completion	x Earnings Diff)	+ (Nf	x Prob of Completion	x Earnings Diff)	− (NT	+ Accounting Costs	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	529	1065	0.95	128	1784	1346	—	25	228	-2399814
=30cr	599	0.65	529	868	0.95	128	1487	1615	—	30	273	-2474745
=35cr	513	0.85	529	761	0.95	128	1274	1884	—	35	319	-2528004
In-school/ACS [1]												
FTE=25cr	719	0.78	523	1065	0.88	128	1784	1315	7	34	160	-2287909
=30cr	599	0.79	529	888	0.89	128	1487	1585	7	39	205	-2378643
=35cr	513	0.80	529	761	0.90	128	1274	1854	7	44	251	-2441975
In-school/ACS [2]												
FTE=25cr	719	0.62	529	1065	0.70	128	1784	1244	22	55	—	-2025422
=30cr	599	0.62	529	888	0.70	128	1487	1493	27	66	—	-2082357
=35cr	513	0.62	529	761	0.70	128	1274	1742	31	77	—	-2120461
Out of School												
FTE=25cr	719	0.30	1205	1065	0.44	206	1784	1244	22	55	—	-2000214
=30cr	599	0.30	1205	888	0.44	206	1487	1493	27	66	—	-2061355
=35cr	513	0.30	1205	761	0.44	206	1274	1742	31	77	—	-2102473

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence

REDUCED COST.

Discount Rate 3%

	Males			Females								
Category	(Nm	× Prob of Completion	× Earnings Diff)	+ (Nf	× Prob of Completion	× Earnings Diff)	− (NT	+ Accounting Costs	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	8835	1065	0.95	792	1784	1346	—	25	228	3348200
=30cr	599	0.85	8835	888	0.95	792	1487	1615	—	30	273	2314405
=35cr	513	0.85	8835	761	0.95	792	1274	1884	—	35	319	1573866
In-school/ACS[1]												
FTE=25cr	719	0.69	8835	1065	0.77	792	1784	1241	7	34	160	2460003
=30cr	599	0.71	8835	888	0.80	792	1487	1510	7	39	205	1701467
=35cr	513	0.73	8835	761	0.82	792	1274	1779	7	44	251	1151649
In-school/ACS[2]												
FTE=25cr	749	0.31	8835	1065	0.35	792	1784	995	22	55	—	352003
=30cr	599	0.31	8835	888	0.35	792	1487	1194	27	66	—	-27044
=35cr	513	0.31	8835	761	0.35	792	1274	1394	31	77	—	-297569
Out of School												
FTE=25cr	719	0.15	11286	1065	0.22	924	1784	995	22	55	—	-478760
=30cr	599	0.15	11286	888	0.22	924	1487	1194	27	66	—	-719209
=35cr	513	0.15	11286	761	0.22	924	1274	1394	31	77	—	-890394

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence

REDUCED COST

Discount Rate 5%

Category	Males			Females								
	(Nm	× Prob of Completion	× Earnings Diff)	+ (Nf	× Prob of Completion	× Earnings Diff)	− (NT	+ Accounting Costs	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	3968	1065	0.95	439	1784	1346	—	25	228	16585
=30cr	599	0.85	3968	888	0.95	439	1487	1615	—	30	273	-461418
=35cr	513	0.85	3968	761	0.95	439	1274	1884	—	35	319	-803591
In-school/ACS [1]												
FTE=25cr	719	0.69	3968	1065	0.77	439	1784	1241	7	34	160	-243962
=30cr	599	0.71	3968	888	0.80	439	1487	1510	7	39	205	-619191
=35cr	513	0.73	3968	761	0.82	439	1274	1779	7	44	251	-891273
In-school/ACS [2]												
FTE=25cr	719	0.31	3968	1065	0.35	439	1784	995	22	55	—	-864383
=30cr	599	0.31	3968	888	0.35	439	1487	1194	27	66	—	-1040510
=35cr	513	0.31	3968	761	0.35	439	1274	1394	31	77	—	-1165589
Out of School												
FTE=25cr	719	0.15	5895	1065	0.22	565	1784	995	22	55	—	-1144293
=30cr	599	0.15	5895	888	0.22	565	1487	1194	27	66	—	-1273725
=35cr	513	0.15	5895	761	0.22	565	1274	1395	31	77	—	-1366609

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence

REDUCED COST

Discount Rate 7%

	Males				Females								
Category	(Nm ×	Prob of Completion ×	Earnings Diff) +	(Nf ×	Prob of Completion ×	Earnings Diff) −	(NT +	Accounting Costs +	Imputed Costs +	Student Expenditures +	Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	1885	1065	0.95	268	1784	1346	—	25	228	-1425449
=30cr	593	0.85	1885	888	0.95	268	1487	1615	—	30	273	-1666233
=35cr	513	0.85	1885	761	0.95	268	1274	1884	—	35	319	-1835507
In-school/ACS [1]												
FTE=25cr	719	0.69	1885	1065	0.77	268	1784	1241	7	34	160	-1417587
=30cr	[illegible]	0.71	1885	888	0.80	268	1487	1510	7	39	205	-1626548
=35cr	513	0.73	1885	761	0.82	263	1274	1779	7	44	251	-1778043
In-school/ACS [2]												
FTE=25cr	719	0.31	1885	1065	0.35	263	1734	995	22	55	—	-1392403
=30cr	599	0.31	1885	888	0.35	268	1487	1194	27	66	—	-1480449
=35cr	513	0.31	1885	761	0.35	268	1274	1394	31	77	—	-1542395
Out of School												
FTE=25cr	719	0.15	3246	1065	0.22	375	1784	995	22	55	—	-1474504
=30cr	599	0.15	3246	888	0.22	375	1487	1194	27	66	—	-1548856
=35cr	513	0.15	3246	761	0.22	375	1274	1395	31	77	—	-1602260

1. Students take 1.5 courses by correspondence and remainder by regular isntruction
2. Students take entire program by correspondence

REDUCED COST.

Discount Rate 9%

Category	Males			Females								
	(Nm	× Prob of Completion	× Earnings Diff)	+ (Nf	× Prob of Completion	× Earnings Diff)	− (NT	+ Accounting Costs	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	960	1065	0.95	178	1784	1346	—	25	228	-2085821
=30cr	599	0.85	960	888	0.95	178	1487	1615	—	30	273	-2213121
=35cr	513	0.85	960	761	0.95	178	1274	1884	—	35	319	-2303919
In-school/ACS[1]												
FTE=25cr	719	0.69	960	1065	0.77	178	1784	1241	7	34	160	-1950294
=30cr	599	0.71	960	888	0.80	178	1487	1510	7	39	205	-2083877
=35cr	513	0.73	960	761	0.82	178	1274	1779	7	44	251	-2180608
In-school/ACS[2]												
FTE=25cr	719	0.31	960	1065	0.35	178	1784	995	22	55	—	-1632124
=30cr	599	0.31	960	888	0.35	178	1487	1194	27	66	—	-1680184
=35cr	513	0.31	960	761	0.35	178	1274	1394	31	77	—	-1713469
Out of School												
FTE=25cr	719	0.15	1905	1065	0.22	269	1784	995	22	55	—	-1643967
=30cr	599	0.15	1905	888	0.22	269	1487	1194	27	66	—	-1690053
=35cr	513	0.15	1905	761	0.22	269	1274	1394	31	77	—	-1721922

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence

REDUCED COST

Discount Rate 11%

Category	Males			Females								
	(Nm	× Prob of Completion	× Earnings Diff)	+ (Nf	× Prob of Completion	× Earnings Diff)	− (NT	+ Accounting Costs	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	529	1065	0.95	128	1784	1346	—	25	228	-2399814
=30cr	599	0.85	529	888	0.95	128	1487	1615	—	30	273	-2474745
=35cr	513	0.85	529	761	0.95	128	1274	1884	—	35	319	-2523004
In-school/ACS[1]												
FTE=25cr	719	0.69	529	1065	0.77	128	1784	1241	7	34	160	-2205119
=30cr	599	0.71	529	888	0.80	128	1487	1510	7	39	205	-2302697
=35cr	513	0.73	529	761	0.82	128	1274	1779	7	44	251	-2373214
In-school/ACS[2]												
FTE=25cr	719	0.31	529	1065	0.35	128	1784	995	22	55	—	-1746827
=30cr	599	0.31	529	888	0.35	128	1487	1194	27	66	—	-1775757
=35cr	513	0.31	529	761	0.35	128	1274	1394	31	77	—	-1795328
Out of School												
FTE=25cr	719	0.15	1205	1065	0.22	206	1784	995	22	55	—	-1734223
=30cr	599	0.15	1205	888	0.22	206	1487	1194	27	66	—	-1765256
=35cr	513	0.15	1205	761	0.22	206	1274	1394	31	77	—	-1786335

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence

IMPROVED COMPLETION RATES
AND REDUCED COST

Discount Rate 3%

	Males			Females								
Category	(Nm ×	Prob of Completion ×	Earnings Diff) +	(Nf ×	Prob of Completion ×	Earnings Diff) −	(NT +	Accounting Costs* +	Imputed Costs +	Student Expenditures +	Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	8835	1065	0.95	792	1784	1346	—	25	228	3348200
=30cr	599	0.85	8835	888	0.95	792	1487	1615	—	30	273	2314405
=35cr	513	0.85	8835	761	0.95	792	1274	1884	—	35	319	1573366
In-school/ACS 1												
FTE=25cr	719	0.78	8835	1065	0.88	792	1784	1241	7	34	160	3124579
=30cr	599	0.79	8835	888	0.89	792	1487	1510	7	39	205	2188137
=35cr	513	0.80	8835	761	0.90	792	1274	1779	7	44	251	1517131
In-school/ACS 2												
FTE=25cr	719	0.62	8835	1065	0.70	792	1784	995	22	55	—	2616454
=30cr	599	0.62	8835	888	0.70	792	1487	1194	27	66	—	1859681
=35cr	513	0.62	8835	761	0.70	792	1274	1394	31	77	—	1318411
Out of School												
FTE=25cr	719	0.30	11286	1065	0.44	924	1784	995	22	55	—	954929
=30cr	599	0.30	11286	888	0.44	924	1487	1194	27	66	—	475350
=35cr	513	0.30	11286	761	0.44	924	1274	1394	31	77	—	132760

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence
* Correspondence costs reduced by 20 percent

IMPROVED COMPLETION RATES
AND REDUCED COST

Discount Rate 5%

Category	Males			Females								
	(Nm	× Prob of Completion	× Earnings Diff)	+ (Nf	× Prob of Completion	× Earnings Diff)	− (NT	+ Accounting Costs*	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	3968	1065	0.95	439	1784	1346	—	25	228	16585
=30cr	599	0.85	3968	888	0.95	439	1487	1615	—	30	273	-461418
=35cr	513	0.85	3968	761	0.95	439	1274	1884	—	35	319	-803591
In-school/ACS [1]												
FTE=25cr	719	0.78	3968	1065	0.88	439	1784	1241	7	34	160	64237
=30cr	599	0.79	3968	888	0.89	439	1487	1510	7	39	205	-393959
=35cr	513	0.80	3968	761	0.90	439	1274	1779	7	44	251	-722056
In-school/ACS [2]												
FTE=25cr	719	0.62	3968	1065	0.70	439	1784	995	22	55	—	183682
=30cr	599	0.62	3968	888	0.70	439	1487	1194	27	66	—	-167251
=35cr	513	0.62	3968	761	0.70	439	1274	1394	31	77	—	-417631
Out of School												
FTE=25cr	719	0.30	5895	1065	0.44	565	1754	995	22	55	—	-376138
=30cr	599	0.30	5895	888	0.44	565	1487	1194	27	66	—	-633681
=35cr	513	0.30	5895	761	0.44	565	1274	1394	31	77	—	-817123

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence
* Correspondence costs reduced by 20 percent

IMPROVED COMPLETION RATES
AND REDUCED COST

Discount Rate 7%

Category	Males			Females								
	(Nm	× Prob of Completion	× Earnings Diff)	+ (Nf	× Prob of Completion	× Earnings Diff)	− (NT	+ Accounting Costs*	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	1885	1065	0.95	268	1784	1346	—	25	228	-1429449
=30cr	599	0.85	1885	888	0.95	268	1487	1615	—	30	273	-1666233
=35cr	513	0.85	1885	761	0.95	268	1274	1884	—	35	319	-1835507
In-school/ACS [1]												
FTE=25cr	719	0.78	1885	1065	0.88	268	1784	1241	7	34	160	-1264213
=30cr	599	0.79	1885	888	0.89	268	1487	1510	7	39	205	-1514800
=35cr	513	0.80	1885	761	0.90	268	1274	1779	7	44	251	-1694037
In-school/ACS [2]												
FTE=25cr	719	0.62	1885	1065	0.70	268	1784	995	22	55	—	-872359
=30cr	599	0.62	1885	888	0.70	268	1487	1194	27	66	—	-1047129
=35cr	513	0.62	1885	761	0.70	268	1274	1394	31	77	—	-1171241
Out of School												
FTE=25cr	719	0.30	3246	1065	0.44	375	1784	995	22	55	—	-1036561
=30cr	599	0.30	3246	888	0.44	375	... 1487	1194	27	66	—	-1183943
=35cr	513	0.30	3246	761	0.44	375	1274	1394	31	77	—	-1258424

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence
* Correspondence costs reduced by 20 percent

IMPROVED COMPLETION RATES
AND REDUCED COST

Discount Rate 9%

Category	Males			Females								
	(Nm	× Prob of Completion	× Earnings Diff)	+ (Nf	× Prob of Completion	× Earnings Diff)	− (NT	+ Accounting Costs*	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	960	1065	0.95	178	1784	1346	—	25	228	-2085821
=30cr	599	0.85	960	888	0.95	178	1487	1615	—	30	273	-2213121
=35cr	513	0.85	960	761	0.95	178	1274	1884	—	35	319	-2303919
In-school/ACS [1]												
FTE=25cr	719	0.78	960	1065	0.88	178	1784	1241	7	34	160	-1967319
=30cr	599	0.79	960	888	0.89	178	1487	1510	7	39	205	-2023848
=35cr	513	0.80	960	761	0.90	178	1274	1779	7	44	251	-2135298
In-school/ACS 2												
FTE=25cr	719	0.62	960	1065	0.70	178	1784	995	22	55	—	-1351800
=30cr	599	0.62	960	888	0.70	178	1487	1194	27	66	—	-1443625
=35cr	513	0.62	960	761	0.70	178	1274	1394	31	77	—	-1513390
Out of School												
FTE=25cr	719	0.30	1905	1065	0.44	269	1784	995	22	55	—	-1375486
=30cr	599	0.30	1905	888	0.44	269	1487	1194	27	66	—	-1466337
=35cr	513	0.30	1905	761	0.44	269	1274	1394	31	77	—	-1530297

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence
* Correspondence costs reduced by 20 percent

IMPROVED COMPLETION RATES
AND REDUCED COST

Discount Rate 11%

Category	Males			Females								
	(Nm	× Prob of Completion	× Earnings Diff)	+ (Nf	× Prob of Completion	× Earnings Diff)	− (NT	+ Accounting Costs*	+ Imputed Costs	+ Student Expenditures	+ Foregone Earnings)	= Results
In-school												
FTE=25cr	719	0.85	529	1065	0.95	128	1784	1346	—	25	228	-2399814
=30cr	599	0.85	529	888	0.95	128	1487	1615	—	30	273	-2474745
=35cr	513	0.85	529	761	0.95	128	1274	1884	—	35	319	-2528004
In-school/ACS [1]												
FTE=25cr	719	0.78	529	1065	0.88	128	1784	1241	7	34	160	-2155893
=30cr	599	0.79	529	888	0.89	128	1487	1510	7	39	205	-2267118
=35cr	513	0.80	529	761	0.90	128	1274	1779	7	44	251	-2346425
In-school/ACS [2]												
FTE=25cr	719	0.62	529	1065	0.70	128	1784	995	22	55	—	-1581206
=30cr	599	0.62	529	888	0.70	128	1487	1194	27	66	—	-1637744
=35cr	513	0.62	529	761	0.70	128	1274	1394	31	77	—	-1677109
Out of School												
FTE=25cr	719	0.30	1205	1065	0.44	206	1784	995	22	55	—	-1555098
=30cr	599	0.30	1205	888	0.44	206	1487	1194	27	66	—	-1616742
=35cr	513	0.30	1205	761	0.44	206	1274	1394	31	77	—	-1659121

1. Students take 1.5 courses by correspondence and remainder by regular instruction
2. Students take entire program by correspondence
* Correspondence costs reduced by 20 percent

APPENDIX 9

ANALYSIS OF CRITICAL LESSONS

Alberta MEMORANDUM
EDUCATION

FROM W.E. Hathaway
Education Consultant
Planning and Research

OUR FILE REFERENCE

YOUR FILE REFERENCE

TO Mrs. K. Doeling

DATE June 16, 1976.

TELEPHONE

SUBJECT Analysis of Lessons

I have just completed an analysis of correspondence lessons on the basis of data collected from teachers in March and May. On the basis of the analysis it seems that some lessons are quite different from others. I would like to have teachers tell me the differences they see between the following sets of lessons.

Course	Unique Lessons	Typical Lessons
English 13	1, 2, 3, 6	5, 11, 14
Social Studies 13	2, 4, 6	3, 10, 15
Math 15	1, 2	8, 14
Health and Personal Development 10	1, 2, 3	15, 16
Physics 20	4	5, 6, 7, 8, 9
German 20	2	10, 11
Physics 30	1	2
French 30	2, 10	3, 4

It would be appreciate if I could have the teachers' responses as soon as possible so that I can summarize this part of the study.

/jp

Alberta MEMORANDUM
EDUCATION

FROM (Mrs.) K. J. Doeling
Alberta Correspondence School'

OUR FILE REFERENCE

YOUR FILE REFERENCE

TO Dr. W. E. Hathaway
Education Consultant
Planning and Research

DATE June 21, 1976

TELEPHONE

SUBJECT ANALYSIS OF LESSONS

I am returning the teachers' comments on the lessons mentioned in your memorandum of June 16.

Kathleen Doeling
(Mrs.) K. J. Doeling
ASSISTANT DIRECTOR

KJD/jlb

Encl.

ANALYSIS OF LESSONS

English 13 - Lessons 1, 2 and 3 are diagnostic. Lesson 3 uses the textbook and the student writes a paragraph for the first time. On the basis of the results in the diagnostic lessons, the student is sent one of three streams for Lessons 6 to 12. Lesson 6 is the first in the A, B & C streams (Lessons 6-12). Each stream is quite different, and Lesson 6 in one stream may be quite different from Lesson 6 in the other two streams.

Social Studies 10 - Lessons 2, 4 and 6 deal with concepts that are somewhat difficult to grasp. (The National Policy, the Winnipeg General Strike and The Duplessis Era). Since the topics are difficult to understand in Lessons 2, 4 and 6, I would expect the students would need to go over the reading material several times. The exercises where students express their own opinions take more time.

Mathematics 15 - Lessons 1 and 2 are fairly short lessons, but students have difficulty with some of the more abstract concepts:

(a) Roman Numerals
(b) Base 5
(c) Prime and Composite Numbers

In the new Mathematics 15 course, we are giving more detailed explanations of these concepts.

Health 10 - Lesson 1: Very short introduction of student to teacher: school program, family life, etc. (In the revised Health 10, the lesson has been expanded to provide information use of leisure, program guidance.)

Lessons 2 and 3: The emphasis is on personality, friendships, and the emotions. The lesson exercises are almost all essays or paragraphs and students find the lesson lengthy. In the revised Health 10 (now ready for typing) several questions have been omitted or combined in an attempt to reduce the amount of exercise work.

Physics 20 - Lesson 4 is the only one in which a teacher can tell whether a student has performed the laboratory work or not. Most likely the students get their first chance to make scale drawings. There is quite a bit of scale drawing work involved in this lesson. Most students find difficulty in the mathematics involved in the application of mirror formula. Although there is extensive laboratory work with mathematics involved, the lesson is presented as a unit for better understanding.

German 20 - Lesson 2 has a larger proportion of objective exercises than the other lessons (7 pages objective; 3 pages subjective). This feature would account for less time spent on Lesson 2. Lesson 2 is a review lesson, and some students seem to be impatient to get on with new material.

Physics 30 - Lesson 1 is basically a lesson in mathematics. Students occasionally have difficulties in mathematical work which is basic to physics, so in this lesson the main stress is on problem solving and related mathematical concepts. In fact,the basic definitions and concepts learned in this lesson are applied in others. The lesson could be very easy for the regular school students with proper background in Physics and Mathematics, but could prove difficult for adult students with no proper background or no recent background in mathematics and physics. But in any event the lesson is unique and is worth it in the course.

French 30 - One may note that both Lessons 2 and 3 are longer than any other lessons --- total of 37 pages each. The past tense is considered a difficult tense for French students. In Lesson 2 - The Passe Compose (past) is dealt with in details. Same in Lesson 10 --- the remainder of the rules for agreement of Past Participles using the past tense is dealt with. Possibly the student might spend more time on those two lessons.

APPENDIX 10

ESTIMATES OF PRINTING COSTS

Alberta MEMORANDUM

GOVERNMENT SERVICES

FROM Bill Aylsworth
Manager, Photocopying & Evaluation
Public Affairs Division

OUR FILE REFERENCE

YOUR FILE REFERENCE

TO Art Ridgeway
C/o Dr. W. Hathaway
Planning & Research Branch
Department of Education
10th Flr., Executive Building

DATE November 23, 1976

TELEPHONE 427-4371

SUBJECT

The attached photocopy shows the pricing of the books you forwarded. The ratio shown for item number 1 between inside and outside printing will remain consistant throughout the series.

After looking at the books and investigating the method of preparation we find nothing that is out of the ordinary for our plant.

The prices we have quoted are all for camera ready copy. If the plates are available from a previous run, we will make an adjustment in the price.

If you have any questions, please call me at 4371.

Bill Aylsworth.

Encls.

Alberta
GOVERNMENT SERVICES

MEMORANDUM

FROM Jim Reid

OUR FILE REFERENCE

YOUR FILE REFERENCE

TO Bill Aylsworth

DATE September 27, 1976

TELEPHONE 4960

SUBJECT

Prices as requested by Alberta Correspondence School.

1. 15,000 76-77 Information Bulletin to consist of 40 inside pages plus cover, printed 1 color throughout - collated and side stitch.
   Cover - 65 lb Mayfair Antique
   Inside - 20 lb #7 Bond
   All copy supplied camera ready.

Price at Central Duplicating	$ 3972.00
If outside Vendor	$ 5917.00
If 4 color cover	$ 6261.00

2. Art 30 booklets to consist of 208 inside pages plus cover, printed black throughout. Collated, 3 hole punched and side stitched.
   Cover - 65 lb Mayfair Antique
   Inside 20 lb #7 Bond

Price	$1412.00

(Price on above based on camera ready copy and only 35 pages requiring metal plates)

3. 300 Lit 21 Booklets, to consist of 170 inside pages plus covers, printed black throughout, collated, 3 hole punch and side stitch.
   Cover - 65 lb Mayfair Antique
   Inside - 20 lb #7 Bond
   All copy supplied camera ready.

Price	$ 779.00

...2

4. Geography of Alberta to consist of 168 inside pages plus cover printed black throughout, to be collated, 3 hole punched and side stitched. 300 copies.
   Cover - 65 lb Mayfair Antique White
   Inside - #7 20 lb Bond
   All copy supplied ready for camera and only 7 pages requiring metal plates.

Price	$840.00

The Information Booklets is a large job and really should be placed in the outside sector, where there would be a delivery time of about 4 weeks.

The other jobs are all able to be done at Central Duplicating and should be done within 10 working days.

As we discussed we will not estimate the Accounting 30 booklets.

JR/do